

Chapter 1

Introduction

CHAPTER 1: INTRODUCTION

1.1 Background to the Study

Currently, the economic structure of Sri Lanka is changing with the adoption of liberalised economic policies. Hence, the country, which had depended primarily on agriculture, is marching towards industrialization and the growth of service sectors. Consequently, there is need for a work force that is trainable and could adapt to changes in a constantly changing environment. In this circumstance, the current education reforms are aiming at developing general skills required by employers in the private sector (Ministry of Education, 2004a).

Further, the development of education: National report (Ministry of Education, 2004a) suggests that changing the methodology of teaching and learning rather than the content of education would help to achieve or bring about or speed up such transformation. It proposes the importance of using activity-based learning techniques such as project work, assignments, and discovery methods that help to sharpen the general skills of students. The report states current reforms as well as future innovations would be directed with this objective in mind.

Changing methodology of teaching and learning, changing the curricula or content of education, upgrading the infrastructure facilities in school systems, and improving the quality of teacher training are not sufficient in themselves to develop the personality and the skills of students as desired by the current educational reforms. As well as these factors, the identification of special needs, aptitudes and abilities, and the provision of educational opportunities that match these needs, aptitudes and abilities, is very important, indeed necessary, for personality and skill development.

Provision of special education for children with special needs was established in Sri Lanka from 1969 (This provision is discussed in more detail in Chapter 2 under Section 2.2.8). Despite the fact that special attention has been given for children with special needs, the education system of Sri Lanka has given little attention to very able children or gifted and talented children. The only criterion adapted to identify the 'academically best' students at the primary level is the island-wide Grade five scholarship examination (discussed in more detail in Chapter 2 under Section 2.4.1).

However, recent educational reforms have highlighted the need for special provision for gifted and talented students. Also, the Proposal xxiv of the new Education Act, in Chapter 9 of the report, Proposals for a National Policy Framework on General Education in Sri Lanka (National Education Commission, 2003, p. 264) places emphasis on the special needs of gifted children and the children with learning difficulties.

As an initial step, in 2002, the National Institute Education of Sri Lanka carried out a study to identify the talents in primary school children in Sri Lanka (National Education Institute of Sri Lanka, 2003). During this study, various talents possessed by students were identified, and in fact, most of them had more than one talent (This study is discussed in more detail in Chapter 2 under the Section 2.4.6). This suggests that, for the past several decades, Sri Lanka may have neglected uncounted numbers of the country's talented children due to the lack of identification, and hence the lack of suitable provisions for the maximum development of their talents. Unfortunately, the National Institute of Education has not continued to conduct further research in this area or in any other activities regarding the education of gifted and talented children. In spite of this lack of attention to academic talents, it is pleasing to state that from year 2006, the Ministry of Education, Sri Lanka has initiated Science and Mathematics holiday camps for year 9 children who excel in these two areas (Wijedasa, personal communication, March 23, 2007). Nevertheless, the only identification method is achievement test marks; no attention is given to gifted underachievers. However, other than the Grade five scholarship examination there is still no attention to the identification of intellectually gifted or academically talented children from primary Grades in Sri Lanka.

The literature on the gifted and talented has indicated that, although it is perceived by the wider community that these students are strong enough to survive on their own, many students labelled gifted do not make it on their own. This is because intellectual development is a dynamic process between the interaction of genetic patterns and environmental opportunities. In order to acquire such interactions, the gifted students, like all other students, need challenges presented to them by their educational experience at a level appropriate with their ability and development (Clark, 2008). Issues such as inadequate curriculum, unsupportive educators, social and emotional difficulties, peer pressures, and inadequate parenting can extinguish the potentially high

accomplishment of gifted children and adolescents (Colangelo & Davis, 2003). Finally, such children may end up as school ‘dropouts’.

Sri Lanka is a country with high literacy rate of over 90 percent. However, the research findings show the country is still facing issues such as Grade repetition and ‘dropouts’ (This is discussed in Chapter 2 under Section 2.3.3, illustrated in Tables 2.8 and 2.9, pp 31). Lower participation rates in higher education and unemployment problems (according to the data of the Sri Lankan Department of Census and Statistics, 2007) also persist in the country. For example, in spite of the high gross enrolment rates for primary and secondary education the net enrolment rate in 2003 was 98.35 (Millennium Development Goal, 2005) and the gross enrolment rate for higher education is only 3.4 (University Grants Commission, 2008).

Rimm (1997) indicated that 10 to 20 percent of high school dropouts are in the tested gifted range. Rimm (Davis & Rimm, 2004) stated that, almost invariably, gifted dropouts are underachievers who are unguided, uncounselled, and unchallenged. She further explained (Rimm, 2003) that when gifted children in elementary school are unchallenged they find learning to be easy, believe that achievement is easy, and they think they can easily attain success. However, when they enter secondary school, the curriculum becomes more complex. Thus, they have to face more competition with peers who are more intellectually gifted, and they find they are not achieving at such a high level as earlier. In these circumstances, some learn more appropriate study habits, while others hide from these threatening feelings. Finally, they discover a whole group of habits and justifications that prevent them from making further effort (Rimm, 2003). Consequently, they may end up in their secondary level education as gifted dropouts. Rimm (2003) reveals that in these situations some of the dropouts could be viewed as gifted students who had experienced underachievement during their primary level. The school system of Sri Lanka would do well to be informed by this example. This also emphasises the importance of taking measures to minimise gifted underachievement at the primary level in Sri Lanka.

Additionally, Sri Lanka is also facing almost all the complex issues faced by modern society, and is finding difficulty in dealing with them (for example, the long-term war, the unemployment problem and an unstable political situation). An inability of the school system to produce people with expertise, skills and knowledge to face such issues could be viewed as one of the reasons for these problems. The role and the

responsibilities of the schools are to develop the skills and confidence of students to achieve their individual potential. Then, in turn, they can contribute to the society in a more positive manner. The responsibility of the education system is to produce citizens who are extraordinarily talented and capable of dealing with complex issues facing the country. Thus, the need now is to identify gifted individuals from the school system of Sri Lanka and provide them with educational opportunities. Such opportunities should be directed towards developing their academic skills, creative skills, social skills, leadership qualities, problem-solving abilities and any other abilities possessed by them. Such developments may enhance their own fulfilment and support their contribution to the benefit of the country and the nations.

Most of the research, both large and small-scale studies conducted in the United States, Germany, Netherlands, and other countries, suggests that children who are identified as gifted at a young age tend to continue to be identified as having high ability later in life (Mönks, 1992). However, Smutny (1999), while summarising some views of several authors on early identification of gifted young children, explains the reasons why, for some of them, the high ability is undeveloped in later life. For example, young gifted children have an extraordinary capacity for reflection and creative thinking, energy, and enthusiasm. Yet they may gradually surrender to frustration and boredom as they sit in classrooms that fail to meet their educational needs. By the time these children reach the eligible age for gifted programs, many of them have lost so much of their original spark and have learned to ignore their own talents and interests as no longer worthy of attention.

This suggests that for those young gifted children to realise their potential in later life they need early identification and appropriate nourishment from their early stages of life. However, if there is no intervention, the development of talent becomes hindered. In these circumstances, the frustrations experienced by very able children can result in negative behaviours, such as underachieving and finally they may become school dropouts. Therefore, the identification of exceptional abilities of children should be done in the early stages of the life. Additionally, to enable children to develop their full potential, they require suitable provisions that match their abilities.

Article 29a of the Convention on the Rights of the Child (UNICEF) declares that every child has a right to develop personality, talents and mental and physical abilities to their fullest. In order to develop such talents and abilities of a child, it is first necessary to

identify their potential and their educational needs. The responsibility for doing this lies with both teachers and parents.

In spite of understanding the importance of providing attention to gifted students, Sri Lanka is still in the preliminary stage in the development of gifted education, especially in the development of intellectual potential and academic talent. Currently, the education system of Sri Lanka has identified the importance of paying attention to the fulfilment of educational needs of this special group of children and has proposed strategies to be implemented (Ministry of Education and Higher Education, 2000). Even though the National Institute of Education, Sri Lanka in year 2002 had laid a foundation for this task by identifying several gifts and talents in primary children in the Sri Lankan school system, no continuation has occurred. Since the provision of special programs for the development of intellectual and academic gifts and talents depends on a thorough and detailed identification procedure (Husen & Postlethwaite, 1994, p. 2725), there is a strong need to propose a suitable identification procedure to identify the gifted student categories in the school system of Sri Lanka. Because the literature shows that such identification and provision should be done from the early stages of individuals (Perleth, Schatz & Mönks, 2000; Clark, 2008), the current study would be focused on students in the primary level education system of Sri Lanka. Therefore, there is a need to carry out a study to discover an appropriate procedure to identify the intellectually gifted and academically talented students in primary level education system in Sri Lanka.

1.2 Purpose of the Study

With supportive and nurturing parents, and high level and challenging educational services gifted children can become professionals, artists, caregivers, and leaders of our nation and the world. Appropriate parenting and education are also needed to help them develop all of their human potential and lead rich and satisfying lives (Feldhusen & Jarwan 2000, p. 271).

Gifted youngsters very soon discover that their feelings, ideas, interests are quite different from their age peers. These students enter the school with many skills, which are already developed. However, if they are provided with appropriate educational opportunities to fulfil their needs, their contributions to society in all areas of human endeavour may become significant. Such gifted young individuals as adults carry out

the tasks that lead all of us to a fulfilling future (Clark, 2008). Therefore, it is understood that the gifted children have special educational needs, and these needs to be identified so that appropriate educational provision can be made. Otherwise, many would not realise their potential.

Accordingly, this study is to focus on finding methodologies to identify gifted and talented primary school children. Indirectly, it is to help these students to realise their potential by recognising their ability so that teachers and parents can begin to address adequately, their current educational needs.

Further, if such identification and provisions do not occur, gifted individuals may develop negative attitudes towards schooling (discussed in section 1.1 in the literature review). Rimm (2003), and Reis and Purcell (1993) highlighted the importance of early identification for preventing negative attitudes towards themselves, and emphasised the importance of fulfilling the needs of gifted children from their very early stage of life.

The importance of providing special education for gifted and talented children, and also of avoiding the damage that could occur to such children when such special attention is not provided are well identified and recognised in Sri Lanka (Deldeniya, 2000).

However, the country's educational system has still paid little attention to this special group. When identified by the parents and the teachers, some students get opportunities to develop their talents in art, music, and dancing as well as in sports, either within school or outside school. Nevertheless, the school system is not giving special attention to identifying intellectually gifted or academically talented students or gifted underachievers.

Even though academically higher achievers are identified by achievement test marks, they just remain in the class and engage in the normal classroom work, without getting any challenges appropriate to their gifts or talents. Since the specific talents in them are not identified, they do not receive any special provision that matches their special gifts or talents. Further, the use of achievement test marks to identify gifted children overlooks the gifted underachievers in the system. Therefore, the view is that gifts and talents (especially intellectual gifts and academic talent) of most of the under-identified children in Sri Lanka are not utilised for their own fulfilment, nor is there any provision for them to ensure their fullest participation in the development of their motherland. If there were an efficient identification procedure to identify their intellectual gifts and academic talents, it would help to minimise the damage the children experience

when such talents are not identified and when there is lack of educational provision and challenge. Accordingly, identification of gifted and talented children will help to fulfil their educational needs and support them to make a greater contribution to the development of the country.

Consequently, this study focuses on this special student group in the education system of Sri Lanka. Identification of these students is very important, prior to providing special provisions for them. The literature illustrates the importance of identifying the gifts and talents in the early stages of life (Whitmore, 1980; Silverman, 1986; Rimm, 2003; Reis & Purcell, 1993). An identification procedure should initially focus on primary children in the Sri Lankan school system. The purpose of this study is to develop an appropriate identification model to identify gifted and talented students in the primary level school system of Sri Lanka, with special emphasis on intellectually gifted and academically talented students. The introduction of a model to identify gifted and talented children from the primary level school system would not only benefit gifted and talented children but would also help to fill a vacuum in the Sri Lankan educational system.

1.3 Variables or Issues to be Examined, Research Questions and Objectives of the Study

1.3.1 Variables or Issues to be Examined

The research literature in gifted education reveals that this special student category is not a group of homogeneous students. Among the gifted students, there are highly-gifted students, moderately-gifted students, mildly-gifted students, and gifted underachievers including ‘invisible gifted underachievers’ too. However, most of the prevailing definitions of giftedness result in the inclusion of only certain kinds of gifted students (e.g. in the western societies, white middle class and academically achieving students) (Richert, 2003). Further, typical identification procedures violate educational equity by consistently excluding large proportions of poor and culturally diverse gifted students. This is because the educators overlook the current research findings on identification and thus the identification procedures they use are based on the definitions, which inappropriately distinguish between gifted and talented students (Richert, 2003).

Gagné's (2003) Differentiated Model of Giftedness and Talent include gifts in several domains which could be developed into several fields of talent, or which may be in an undeveloped condition. Further, this model introduces other factors, called catalysts, which are involved in the talent development process. Catalysts include environmental factors such as milieu, the social context in which the students is found. They also include the many different people - parents, siblings, peers and teachers - who may exert positive or negative influences on the talent development process. The development of talents and the degree of the development depends on the interactions of these factors together with other catalysts such as the psychological make-up of the student. That is, it should be expected that the development of giftedness into talent will result in a heterogeneous group of gifted and talented students.

In Sri Lanka for the public the concept, 'giftedness' is ambiguous. Students who score high marks in academic subjects, Grade five scholarship examination or excel to achieve first, second, or third positions (especially in sports, arts dancing competitions etc) are considered as bright children or academically highly talented. The word gifted is also used to describe the same individuals. Giftedness and talent are not defined, even in the study conducted by National Institute of Education in 2002 (discussed in Chapter 2). This study focused on identifying specific talents in primary students, but not much attention was given to identify giftedness or the levels of giftedness. This indicates, because of the lack of awareness of the heterogeneous nature of the giftedness, the study has overlooked this issue.

There is clearly a need to develop an identification model that could be able to identify students belonging to all these categories in the primary level of education. Since these groups are different in nature, may show different characteristics as well as differences in achievement levels, one common criterion or method may not be appropriate to identify individuals belonging to all these categories. Therefore, the present study explores methods including using achievement test marks, teacher nominations, parent nominations, peer nominations and self-nominations to identify moderately and highly gifted students. Additionally, dynamic testing will be used to identify gifted underachievers, including invisible underachievers, and also above level testing to further identify gifted higher achievers. This study aims to identify to what extent all these methods would help to identify gifted students in the primary level of Sri Lanka.

Therefore, the research questions of this study are designed to adequately address the initial step to meet their current educational needs.

The research questions are as follows.

1.3.2 Research Questions

1. Who are the intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka who can be identified by means of achievement test scores?
2. Who are the of intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers, from the selected sample of Primary Grade level schools in Sri Lanka, who can be identified by means of Raven's Standard Progressive Matrices (RSPM) test and dynamic testing?
3. Who are the intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka who can be identified by employing Gagné's Peer, Teacher and Self-Nomination Forms (PTSNFs)?
4. Who are the intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka who can be identified by using Rogers' Parent Inventory for Finding Potential (PIP)?
5. Who are the gifted and talented children from the selected sample of the Primary Grade level schools in Sri Lanka who need further educational challenge beyond their Grade level, identified by means of above-level testing?
6. What methods should be included in an identification model appropriate to identify intellectually gifted and academically talented Primary Grade students, including highly-gifted students, gifted underachievers and invisible underachievers, in the schools of Sri Lanka?

1.3.3 The Objectives of the Study

The following are the objectives that arise from the above research questions.

1. To identify the group of intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka by means of achievement test scores.
2. To identify the group of intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers, from the selected sample of Primary Grade level schools in Sri Lanka by means of Raven's Standard Progressive Matrices (RSPM) test and dynamic testing.
3. To identify the group of intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka by employing Gagné's Peer, Teacher and Self-Nomination forms (PTSNFs).
4. To identify the group of intellectually gifted and academically talented students from the selected sample of the Primary Grade level schools in Sri Lanka by using Rogers' Parent Inventory for Finding Potential (PIP).
5. To identify by means of above-level testing gifted and talented children, from the selected sample of Primary Grade level schools in Sri Lanka, who need further educational challenge beyond their Grade level.
6. To propose a model to identify intellectually gifted and academically talented students, appropriate for the Primary Grade level schools in Sri Lanka.

1.4 Significance of the Problem

The aim of this study is to develop a suitable identification model to identify gifted and talented children from the primary Grade level of the school system of Sri Lanka. The literature on gifted education warns that current identification techniques and processes overlook certain categories of gifted children who need services. The students who need such services include gifted children from cultural minority families and economically disadvantaged families, and gifted children with disabilities (Richert, 2003; Rimm, 2000; Chaffey, Bailey & Vine, 2002). Some identification procedures may overlook the highly-gifted students due to the ceiling effects of the tests used to identify them (Silverman, 1989; Feldhusen & Baska, 1989). Further, the literature revealed that these

issues arise because most of the existing identification procedures are based on narrow definitions and conceptions of giftedness and talent (Richert, 2003).

Gagné's (2003) Differentiated Model of Giftedness and Talent appears the most appropriate model for the Sri Lankan educational context, and is selected to provide the conceptual background to the current study (this is discussed in depth in Chapter 3). The current study will endeavour to identify gifted students belonging to all of the categories discussed above, including gifted underachievers and invisible underachievers. Therefore, the identification instruments will include strategies to identify gifted and talented children belonging to all possible categories of gifted children. Since gifted education is still in a very early stage in Sri Lanka, the introduction of a strong identification model will lay a good foundation to gifted education in Sri Lanka.

It is expected, at least at this stage of development, that educators, teachers and parents in Sri Lanka will tend to recognise giftedness and talent in a narrow sense, and perhaps will not identify children who, for example, show characteristics of gifted underachievers. This study would help to change the perceptions of the teachers and parents of underachieving students, who have so far been identified as 'weak' or 'hopeless' students. The emphasis would then be on identifying talent potential (gifts), and the nature of this potential.

It is important to note that the identification process should always be followed by appropriate educational intervention or provision. When teachers identify the diversity of giftedness and talent in students by a holistic identification process, they will understand the necessity of providing according to each student's individual capacity, rather than making common provisions. Thus, it is the hope of the researcher that the findings of this research will direct the Sri Lankan education system to a successful pathway in the area of gifted education. It also has the potential to give insight to other countries, which are in early stages in gifted education.

In the current study, the process of 'Dynamic Testing' (discussed in Chapter 4) will be applied to identify gifted underachievers. The 'Dynamic Testing' process has been recently introduced to identify gifted underachievers from minority cultures and low socio-economic backgrounds. The findings of the Dynamic Testing process of the study will help to reveal the effectiveness of dynamic testing, so that it will contribute positively or negatively to the available literature on Dynamic Testing and on gifted

identification. However, the Dynamic Testing in this study is limited: further research will be required to refine the meta-cognitive intervention and to assess the validity and reliability of the process. In addition, since meta-cognitive intervention is embedded in the dynamic testing process, the success of this process will illustrate to teachers and educators that giftedness and talent may be developed by providing appropriate interventions.

As well as IQ tests, achievement test marks and dynamic testing, teacher, parent, peer and self-nominations will be implemented to gather rich information on giftedness and the talents possessed by the students in the sample. Introducing the strategies of teacher, parent, peer and self-nominations will indicate how effective the teachers, parents, peers and the gifted students themselves are in identifying giftedness and talent. By considering the results of each nomination, as well as test marks, the researcher expects to find out the effectiveness of each form of nomination, and to what extent such nominations could be used effectively to identify gifted and talented children in Sri Lanka. This will also add rich data, from a different educational context, to the prevailing debate concerning the value of such nominations.

Further, in the current study the researcher will support the quantitative data by developing 12 case studies of 12 students, including students who have been identified as gifted underachievers, highly gifted students and moderately gifted students. One of the aims of these case studies is to identify school, parental, peer, self, family and socio-economic factors underlying their underachievement or supporting their high achievement. This information may help teachers and parents to understand their children better, to minimise the factors that cause underachievement, and to provide positive support so that the children may realise their potential. The other aim of the case studies is to triangulate the quantitative data and the interview data. Finally, the study will inform the education ministry and the education policy makers of Sri Lanka concerning the development of education for this particular group of primary students.

1.5 Definitions of the Terms

The key terms of the present study are ‘gifted’, ‘talented’ and ‘identification’. The study has a special emphasis on ‘intellectual giftedness’ and ‘academic talent’. The definitions of these terms are presented in this section.

A description of the terms underachievement, invisible underachievement, above-level testing, and dynamic assessment will appear in the literature review.

1.5.1 Gifted and Talented

The concept of giftedness is so complex that it is very difficult to arrive at a single satisfactory definition. There is no one definition of ‘gifted’, ‘talented’ or ‘giftedness’ that is universally accepted. Common usage of the terms, even at times by experts, is ambiguous and inconsistent. The terms sometimes are used interchangeably, as when for example, a person is described as a ‘gifted artist’ and a ‘talented artist’. For convenience, many authors use the single word gifted to abbreviate gifted and talented. Some writers and the public see talent and giftedness on a continuum, with giftedness at the upper end (Davis & Rimm, 2004). Some avoid the term gifted, preferring the term ‘more able’. One such example is The Scottish Network for Able Pupils. It expresses the Scottish view on these special students as follows:

Many countries in the world call these young people gifted and talented and certainly our Scottish pupils have exceptional abilities in a whole range of areas, however in keeping with our inclusive approach to education in Scotland we prefer to call our pupils ‘more able’. In many ways, what we call them does not matter, what is important is that their abilities are recognised challenged and celebrated. (Scottish Network for Able Pupils, n.d.)

Renzulli and Reis (1997) prefer the phrase ‘gifted behaviours’, which they claim can be developed in certain circumstances. They argue that the label of ‘gifted’ should not be bestowed on children because of the identification process. For the same reason, many prefer the phrase ‘potentially gifted’ (Davis & Rimm, 2004).

Undoubtedly, there is a need to carefully observe and critically analyse prevailing concepts and definitions in order to understand and clarify these two concepts. Such concepts and definitions are critically analysed in Chapter 3, ‘The conceptual framework to the study’. As discussed there, unlike many other prevailing definitions and conceptions of giftedness and talent, Gagné’s model, which has continued to be refined in response to recent research data and to the debates in the literature, presents the nature of giftedness and talent, and clearly differentiates between them. This is a multi-faceted or multidimensional definition, or, rather, it is a model with definitions contained within it. In the current study, the accepted definitions for giftedness and for talent are from Gagné’s Differentiated Model of Giftedness and Talent (Definitions and conceptions of giftedness and talent, including Gagné’s definitions of giftedness and talent and Gagné’s Differentiated Model of Giftedness and Talent, are discussed in

more detail in Chapter 3). In brief, giftedness refers to the child's natural high ability or high learning potential, and talent refers to the child's high achievement or high performance.

1.5.2 Intellectually Gifted and Academically Talented

Since the current study has concentrated on the intellectually gifted and academically talented children, further clarification of what is meant by intellectually gifted and academically talented has been made. The researcher's definition of identification based on Gagné's model, and appropriate to the current study, is illustrated in Chapter 3.

1.5.3 Identification

The literature reveals that current identification procedures present major difficulties when attempting to identify gifted children from special groups such as disadvantaged groups, including groups from backgrounds of low socio-economical status and culturally minority status (Frasier, 1991; Richert, 2003). Identification procedures are needed to identify individuals from particular groups whose potential or talent could manifest itself in ways other than test scores. Therefore, an efficient identification procedure should be flexible. It should include many other sources such as diagnostic sources of information including life data (observations), questionnaire data, checklists (which include behavioural characteristics of giftedness and talent), nomination procedures (teacher, parent, peer and self), diagnostic interviews, and standardised tests in addition to achievement test data.

The identification criteria depend on the selected conception or model of giftedness and talent, and on the aims of the identification and the educational program for which the children are selected (Husen & Postlethwaite, 1994; Feldhusen & Jarwan, 2000). Since Gagné's model, which acknowledges the multifaceted nature of giftedness, provides the conceptual framework to the current study, the identification procedure applied to the study should include multilevel criteria. Therefore, the most appropriate definition of 'identification' for the current study can be presented as follows:

The employment of multilevel identification procedures (test data, nomination data, observations, interviews, dynamic testing, etc.) to screen gifted and talented students from wider populations including disadvantaged groups (e.g. culturally diverse minority groups, groups from low socio-economical backgrounds, etc.), in order to recognise the special gifts and talents of the individual students. Such identification procedures could be used to select the students for specialised programs.

1.6 Brief Outline on the Presentation of the Current Study

The current study has six phases. The historical development of the Sri Lankan education system, and its organization, structure and management, were reviewed. The structure of the schools within the Sri Lankan educational system, and curriculum and Grade structure were examined. Recent developments and empirical data on primary education in Sri Lanka, and the status of gifted education in Sri Lanka, were examined at the first phase of the study (Chapter 2).

During the second phase, in order to perceive a clear and accurate understanding of the concepts of gifted and talented, the researcher examined the available literature on concepts and models on giftedness and talent to identify the most appropriate model to form the conceptual framework to this study. This second phase will be presented as the conceptual framework to the study, and hence should be separate from the literature review phase (Chapter 3).

The third phase is the critical review of literature on identification of gifted and talented individuals (Chapter 4). At the fourth phase, the methodology (including a pilot study) to address the research questions will be discussed (Chapter 5). Interpretation of data, data analysis, and discussion will be presented at the fifth stage (Chapter 6). Finally, at the sixth phase, a summary, the conclusions and the recommendations of the study will be presented (Chapter 7).

Chapter 2

General Background and Education in Sri Lanka

CHAPTER 2: GENERAL BACKGROUND AND EDUCATION IN SRI LANKA

2.1 General Background of Sri Lanka

The Democratic Socialist Republic of Sri Lanka, formerly known as Ceylon, is an island situated in the Indian Ocean 880 km north of the equator, at the base of the Indian Sub-Continent. Its area is about 65,610 km² and it measures 435 km from north to south and 225 km from east to west. Sri Lanka has a pleasant tropical climate: the temperature of the coastal plains is about 25-30 degrees Celsius, and in the central highlands the temperature ranging from 10-20 degrees Celsius. For administrative purposes, the country is divided into nine provinces. The largest city is Colombo, while Sri Jayawardenepura-Kotte is the officially designated capital and is the site of Parliament (Appendices 2.1, 2.2, 2.3, & 2.4 shows the location of Sri Lanka, its major cities, and its major educational regions).

Sri Lanka is a multi-ethnic and multi-religious country with a diverse and rich culture. The total population is 20.1 million, with an annual growth rate of 1.14% (U.S. Department of State, Bureau of South and Central Asian Affairs, 2007). Its work force is about 7.2 million. The ethnic group Sinhalese represents the majority or 74% of the population and is concentrated in the densely populated southwest. Tamils (18%, with Sri Lankan Tamils 13% and Indian Tamils 5%), Muslims (7%) and other minorities (1%) represent minority groups. Religious groups comprise Buddhists (69% of the population), Hindus (15%), Moslem (8%), and Christians (8%). The official languages are Sinhalese and Tamil. English is also widely spoken and is studied as a compulsory second language in schools the main agricultural products of Sri Lanka are rice, tea, rubber, coconut and spices. Major industries include the manufacture of garments, leather goods, wood products, basic metal products and paper products, food processing, and the production of chemicals and refined petroleum (U.S. Department of State, Bureau of South and Central Asian Affairs, 2007).

2.2 Education in Sri Lanka

Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. (Office of the High Commissioner for Human Rights, 1996-2005)

The above quota from Article 26-1 of the Universal Declaration of Human Rights (1948) proclaims the right of a person to education. However, education was highly valued in Sri Lanka in ancient times, and since then it has been a major field of state and volunteer activity. The state's effort to provide education for all is best reflected in the literacy rates of the island. According to 2004 records, the literacy rate of adult males is 92%, and of females is 89% (UNESCO, 2005). It is therefore worthwhile to consider the development and present situation of education.

2.2.1 History of Education in Sri Lanka

Remains of art, including sculptures, and of engineering works such as large reservoirs and a canal system, provide evidence of a rich culture with a sound education system in ancient Sri Lanka.

Until the arrival of King Vijaya about 543 BC, the descendants of the royal family received their education under the 'Brahmins' in 'Gurukula' or 'Gurugedera' (home of the teacher) system. However, with the introduction of Buddhism came Buddhist civilization and the Buddhist education system. Most significant during this period was the establishment of 'Pirivenas' (educational institutes attached to Buddhist temples catering for Buddhist monks, and conducting general education classes for male students who do not attend formal schools) or monastic colleges. The establishment of several Buddhist education institutes paved the way for the discontinuation of 'Gurugedara' system. The basics of Buddhist philosophy also led to the establishment of the earliest universities in the world: Mahavihara and Abayagiriya, established in 103 BC, were the most ancient ones. The principles of free education, equity and access to education were traditionally established in these institutions (Ministry of Education, 2004b).

During the period of King Mahasen (3rd century A.D.), the Jethvanarama monastery was founded, where the curriculum was not confined only to religion but also included

other languages, the history of many countries, Vedic and post-Vedic literature, medicine, astronomy, poetry and architecture. Villagers came to the temples to listen to 'Dharmma' preached by 'Bhikku' (Buddhist monks), and these temples became institutions for primary education. The perivenas, where 'Bhikkus' received their education in 'Dharmma', became the institutions for secondary education. 'Mahavihara' with learned staff, facilities for research, and libraries, became the centre for tertiary education.

During the Polonnaruwa (1073–1215 AD) and Dambadeniya (1232–1271 AD) periods, more pirivas were established. Education was also provided in weaving, gold, silver metal work, clay pottery, tailoring, architecture, town planning, engineering, construction of irrigation systems, arts, painting and literature. The remains of Dagebas, Viharas, reservoirs, irrigation canals and dams, Sigiriya frescos and Sigiri graffiti are evidence of the high level of knowledge and skill development in these areas (Ministry of Education, 2004b).

In 1505 AD, Sri Lanka was invaded by Portugal. The Portuguese introduced an education system in the provinces under their control, with the aim of converting the local population to Catholicism. The curriculum in these schools included religion, reading, writing and arithmetic. Girls were given elementary education in parish schools, but were denied entry into secondary schools and the seminaries that provided higher education (Prasad & Kulatunge, 2006).

Again, in 1658 AD, the island was conquered by Holland. The Dutch continued the practice of educating children to gain the confidence of the people. The aims of their education system were the conversion of local people to Protestantism or the Dutch Reformed faith and to suppress the spread of Catholic religion; to teach reading and writing to those newly converted people; and to train a set of local people to assist with work in government offices. The Dutch set up a school in Colombo to train teachers, and also established the 'Scholar Commission', which supervised and promoted education. The periods of Portuguese and Dutch rule were not favourable for the Buddhist education system. However, during the period 1698 to 1778, the last Sangha Raja (Chief Buddhist priest) of Sri Lanka, Velivita Saranankara, devoted himself to educate Buddhist monks and to encourage them to spread the Buddhist doctrine. He trained Buddhist monks to deliver intelligent discourses to educate the layman. He also collected a large amount of material and supervised his pupils to transcribe all the books

necessary for their education (Prasad & Kulatunge, 2006; Ministry of Education, 2004b).

In 1796, Britain occupied Sri Lanka, and the British continued to impart an education and to attempt to convert locals to Christianity. During the period of 1805–1824, Christian Missionary institutions were active in setting up schools and providing education throughout the country. In 1831, in order to establish proper supervision and administration of education, the Colebrook commission was established, which made recommendations for the reorganization of the education system in Sri Lanka. One of the recommendations was to make English the medium of instruction in all schools. A college was established to provide English education, the Colombo academy was established to train teachers to instruct in English medium, and government jobs were offered to youths educated in English (Prasad & Kulatunge, 2006). Consequently, the importance of the vernacular schools faded. However, Governor Mackenzy (Ministry of Education, 2004b) later proposed educational reforms. The reforms included the reorganization of all government schools, linking the missionary schools to government schools; admitting children to all schools without consideration of religion, the development of vernacular schools and a supply of books translated into national languages; the establishment of an institution to train teachers and the appointment of school inspectors; and a reorganization of the school commission.

The implementation of these recommendations eventually brought about significant changes in the education system in Sri Lanka. In 1889, the Medical College and the Law College were established, the School of Agriculture and the Government Technical College were opened, and in 1921, the University College in Colombo began to prepare students for external examinations for the University of London.

In the mean time, during the mid 19th century, it was necessary for Buddhist and Hindu children to attend one of the Christian schools that had been established. However, Col. Henry Steel Olcott, who arrived in Sri Lanka in 1880, organised the Buddhist Theosophical Society and started about 140 Buddhist schools. At about the same time, leaders of the Muslim and Hindu communities started their own schools. Thus by the beginning of 20th century the opportunities for education in Sri Lanka were numerous with Government, Missionary, Buddhist, Hindu and Muslim schools, and, by 1921, 90% of children attended school (Ministry of Education, 2004b).

During the State Council Era (1931-1947), there was a further significant development of education in Sri Lanka. The country's first Minister of Education and the first

Chairman of the Executive Committee for Education, Dr. C. W. W. Kannangara, a Sri Lankan, placed education on a firm ground by introducing free education for all children from kindergarten to university. He also introduced the policies that ensured, the medium of instruction in the primary school is the mother tongue (either Sinhalese or Tamil), and the teaching of English in all schools from standard three (Grade 3). Further, he introduced a policy that every child should be provided with instruction in the religion of each child's parents, and the introduction of a curriculum that would develop each child's 'head, hearts and hands' (Ministry of Education, 2004b).

Furthermore, in order to provide quality education, 53 Central schools with the best available teachers and facilities were established. From 1943, an annual scholarship program was initiated offering the best performers at the (Grade 5) scholarship examination free board and lodging in these central schools. This is evidently the first step taken by the Sri Lankan government to identify and to provide the best educational opportunities to academically gifted children (Prasad & Kulatunge, 2006; Ministry of Education, 2004b).

2.2.2 The Education System in Sri Lanka after Independence - Early Years

Independence came to Sri Lanka in 1948. Since then, the government has given high priority to education. All assisted schools and training colleges were nationalised to ease the difficulties experienced by the previous system of dual control. Within forty years, the number of schools increased by 50%, the number of students increased by 300% and number of teachers increase by 400%. By the mid-1980s, over 90% of the population was literate, the highest rate for south East Asia. (Ministry of Education, 2004b.)

In 1981, three government committees recommended further reforms in education. A new structure to the school system proposed: Primary School (Grades 1–5), Junior Secondary School (Grades 6–8), Senior Secondary School (Grades 9–11), and a Pre-university stage (Grades 12–13). A new subject 'Life skills' was introduced to replace the pre-vocational subjects. Evaluation in the Senior Secondary School included a dual system of continuous assessment (oral, written and practical assessment during the course) and formal end-of-year examinations. In order to manage the schools better and to improve the use of resources, a school cluster system was introduced. Each cluster comprised a large school or cluster centre, and 10–15 small schools surrounding it; the principal of the cluster centre was responsible for the administration and supervision of

educational activities in the cluster. Finally, the previous system of external examinations, the General Certificate in Education (Ordinary Level), or GCE (O/L), and the General Certificate in Education (Advanced Level), or GCE (A/L), was re-established (Prasad & Kulatunge, 2006; Ministry of Education, 2004b).

With the implementation of these reforms, some significant changes gradually occurred in the education system of Sri Lanka. Textbooks and uniforms were provided free for all students. The Ministry of Education was divided into three separate ministries: the Ministry of Higher Education, for universities and technical colleges; the Ministry of Education, for schools, pirivenas, teacher training colleges and colleges of education; and the Ministry of Education Services for administration. The National Institute of Education was established to undertake educational research, curriculum development, and the education of teachers and educational administrative personnel at undergraduate and postgraduate levels. There are now 17 Colleges of Education for pre-service education for new recruits to the teaching profession. By the end of the twentieth century, the effectiveness of the reforms was reflected in the net enrolment rate among the 5–9 year old age group of 97% (Ministry of Education, 2004b).

2.2.3 Changes to the Education System in Sri Lanka at the Beginning of the Twenty-first Century

It was evident during the 1990s that the government of Sri Lanka had made creditable gains in student enrolment, literacy and gender equity, especially when compared with other countries in the region. However, it was also clear that the country still faced many social problems, including poverty, unemployment, youth unrest, and ethnic violence. Since it was identified that the education system had not played a completely successful role in the total development of the person, restructuring and reform in the education system was again found to be an urgent need (Ministry of Human Resource Development, Education & Cultural Affairs, 2004).

Consequently, The National Education Commission (NEC) was appointed to advise the government on an overall Policy covering all aspects of Education in Sri Lanka. The committee proposed two main policy initiatives, namely, improvement in the quality of education, and providing education for all (Ministry of Education, 2004c). Out of them, the improvement of quality of education covered the whole span of general education from early childhood to college level. Consequently, primary level of education was divided into three stages from 1998, with curriculum specific for each stage.

Stage 1 (Grades 1 and 2) – the main learning mode will be guided play, with secondary emphasis on active learning and a minimum amount of desk-work;

Stage 2 (Grades 3 and 4) – equal importance will be given to all three modes of learning, activity, desk-work and play;

Stage 3 (Grade 5) – Greater emphasis placed on desk-work.

The new curriculum comprises four main subjects, First language, Mathematics, Environmental related activities and Religion, with the introduction of activity-based English from stage 1 (Ministry of Education, 2004c). Several studies were carried out to evaluate the success of these implementations (more details will be presented in the Section 2.3 Primary Education in Sri Lanka, pp. 28).

Even though the enrolment rate was high, it was found that 14% of children aged 5–14 years old were not attending school. In order to achieve the objective ‘Education for all’, the reforms introduced regulations, which strictly enforced parents to send their children of 5–14 years of age to school (Ministry of Education, 2004a). Furthermore, 340 rural schools were developed as ‘Navodaya’ (which means new beginning) schools by improving infrastructure and the quality of education. Finally, a special unit was established to develop professional standards for teachers, principals and supervisory staff so that evaluation can be carried out on a more objective basis (Ministry of Education, 2004b.)

2.2.4 The Organization, Structure and Management of the Education System

In Sri Lanka, education is a shared activity between the central ministry and the provinces. The Minister of Education is vested with the authority to implement education policy on education and is accountable to the government. The central Ministry of Education is responsible for National Policy, National Plans, and the management of National Schools, Teacher Education and Higher Education, and the maintenance of standards in all schools including quality assurance. Provincial councils are responsible for the management of all provincial schools and pre-schools. They receive funding mainly through government grants administered by the Finance Commission, and they can raise income from local resources. Provincial councils can recruit teachers subject to rules laid down by Central Ministry.

Further, several national level institutions are responsible for specific aspects of education, and function under the Ministry of Education. They are the Department of Examinations and National Testing Services, which is responsible for the conduct of

national examinations, and the Department of Educational Publications which is responsible for the publication and distribution of textbooks. The National Institute of Education (NIE), which is responsible for the development of national curricula, the training of teachers, and conducting research in education, and the National Library Services Board, which is responsible for the development of libraries (Ministry of Education, 2004c), are two of other national level institutions function under Ministry of Education.

Each provincial council includes a Provincial Ministry of Education, with a Provincial Minister of Education in charge of education in the province. Provinces divided into Educational Zones, run by a Zonal Director of Education. Management functions relating to the implementation of policy is carried out at this level. The Chief Executive Officer is the Secretary to the minister and is accountable to the Minister and the President for implementation of policy. There are also additional Secretaries, Deputy Directors General and Directors as Heads of Departments, who are responsible for the key divisions in the ministry (Ministry of Education, 2004a).

2.2.5 System and Structure of the Schools in Sri Lanka

In Sri Lanka, the two main categories of school system are Government and Non-government schools.

Table 2.1 Categories of government schools in Sri Lanka (Ministry of Education, 2005)

| School Category | Description |
|------------------------|---|
| 1AB schools | Classes with Grades 1–13 or Grades 6–13, and with advanced level classes in Science, Arts, Commerce and Aesthetic streams |
| 1C schools | Classes with Grades 1–13, and with advanced level streams other than Science |
| Type 2 schools | Classes with Grades 1–11 |
| Type 3 schools | Classes with Grades 1–5 |

Non-government schools include estate schools, ‘pirivenas’ approved or certified schools, pre-schools, and international schools (Ministry of Education and Higher Education, 2000). According to the school census (Ministry of Education, 2005) there are about 9725 government schools in Sri Lanka. The categories for these schools are

set out in the above Table 2.1 Table 2.2 shows the number of government schools by category, and the number of teachers and students, for each educational province in Sri Lanka.

Table 2.2 Schools, Teachers and Pupils in Sri Lanka in Each Educational Province
(Ministry of Education, 2005)

| Province | Number of Schools | | | | | No. of | No. of |
|---------------|-------------------|--------------|--------------|--------------|--------------|----------------|------------------|
| | 1AB | 1C | Type 2 | Type 3 | Total | Teachers | Pupils |
| Western | 157 | 247 | 653 | 299 | 1,356 | 37,910 | 863,207 |
| Central | 89 | 304 | 518 | 555 | 1,466 | 26,783 | 530,136 |
| Southern | 92 | 235 | 545 | 225 | 1,097 | 26,546 | 519,915 |
| Northern | 64 | 113 | 304 | 407 | 888 | 9,888 | 259,129 |
| Eastern | 57 | 155 | 357 | 403 | 972 | 14,677 | 364,640 |
| North western | 71 | 260 | 642 | 251 | 1,224 | 24,600 | 470,307 |
| North Central | 29 | 144 | 342 | 266 | 781 | 12,651 | 262,053 |
| Uva | 40 | 157 | 383 | 250 | 830 | 14,613 | 290,442 |
| Sabaragamuwa | 47 | 197 | 494 | 371 | 1,109 | 19,117 | 381,859 |
| Total | 646 | 1,812 | 4,238 | 3,027 | 9,723 | 186,785 | 3,941,688 |

Table 2.3 Number of girls' schools, boys' schools, and mixed schools in Sri Lanka in 2005 (Ministry of Education, 2005)

| Province | Girls schools | Boys schools | Mixed schools | Total schools |
|-------------------|---------------|--------------|---------------|---------------|
| Western | 91 | 58 | 1207 | 1356 |
| Central | 33 | 18 | 1415 | 1466 |
| Southern | 19 | 13 | 1065 | 1097 |
| Northern | 30 | 15 | 843 | 888 |
| Eastern | 32 | 22 | 918 | 972 |
| North western | 11 | 9 | 1204 | 1224 |
| North Central | 1 | 2 | 778 | 781 |
| Uva | 5 | 4 | 821 | 830 |
| Sabaragamuwa | 9 | 5 | 1095 | 1109 |
| Total | 231 | 146 | 9346 | 9723 |
| Percentage | 2.3 | 1.5 | 96.1 | |

In Sri Lanka, most schools are co-educational. In 1997, for example, 97% of schools were mixed schools, 1.2% of schools were boys-only, and 1.8 % of schools were girls-only (Little, nd). Table 2.3 shows the school status in year 2005 according to the school census (Ministry of Education, 2005).

2.2.6 Curricular Policies, Grade Levels and Major Examinations

Schools are expected to follow the National Curriculum prepared by the National Institute of Education. However, there is adequate provision for local variations, particularly in the lower Grades, as no restrictions are placed on the National Levels (Ministry of Education, 2004a). Three public examinations are held during the span of 13 years. At the end of the primary cycle, the Grade 5 scholarship examination is held. Those successful at this examination are provided with an opportunity to enter a ‘popular school’, and financial assistance is provided for needy children. At the end of Grade 11, the GCE(O/L) examinations are held, and the results are used as a basis for students to enter the streams they wish to study in Grades 12 and 13. At the end of Grade 13, the GCE(A/L) examinations are held, and the results are used for either selection to enter university or certification for employment (Ministry of Education and Higher Education, 2000).

2.2.7 Significant Developments in Education in Sri Lanka

2.2.7.1 Participation in education

When compared with other developing countries, Sri Lanka has achieved a very high level of student participation in education. About 98% of five-year-old children enter Grade 1 classes. Education is compulsory until 14 years of age, at which stage about 17% drop out of school. The dropout rate beyond primary education is highest in rural districts, plantation areas and deprived pockets in urban areas (Ministry of Education and Higher Education, 2000). The reasons for this non-participation are due broadly to low socio-economic status, which leads to poverty, and other factors such as family breakdown, mothers migrating to foreign countries, and refugee status due to the long-term civil war or to natural disasters.

2.2.7.2 Equity in education

A National Curriculum introduced in all government schools helps provides equality and equity in education. There are professional standards for teachers, who are all

professionally trained and also provided with regular in-service or professional learning. Equity of access to education is ensured by the provision of free education, free textbooks, free school uniforms, and subsidised transport. Deserving students from low-income families are also provided with bursaries, which are continued up to university level, and with a daily nutritional meal.

2.2.7.3 *Quality of education*

The National Education Commission has identified a set of general competencies that should be acquired by all children. Therefore, in each Grade level the curriculum has been developed to reflect these competencies. A major national report (Ministry of Education 2004a) indicates that more work is still to be done to change the attitudes of teachers, acknowledging that the success of education rests largely on the function of school personnel, especially teachers.

Therefore, several measures have been implemented in teacher education courses. Since pre-service teacher education is an essential requirement, 17 colleges of education have been established. Today, the teacher education network of Sri Lanka comprises the National Education Institute, four university Faculties or Departments of Education, the 17 colleges of education, four teacher education institutes, 100 teacher centres, and 30 English Support Centres (RESCs) that provide in-service continuing education for English teachers of the system (Ministry of Education, 2004a).

2.2.7.4 *Gender equality in education*

Table 2.4 The completion rate for Primary and Junior Secondary by gender (Source: Planning Division, Ministry of Education (2001), as cited in Ministry of Education, 2004a)

| Stage | Male | Female | Overall |
|-----------|------|--------|---------|
| Primary | 96.9 | 98.3 | 97.6 |
| Secondary | 79.1 | 86.3 | 83 |

Due to the policy of providing free education from Grade 1 to university level, Sri Lanka has achieved a significant improvement in gender equality in access to general education (Ministry of Education, 2004a). Table 2.4 illustrates the progress that has been made.

Table 2.4, for example, shows that at Primary level the achievement rate for girls is a little higher than that of boys, whilst at Secondary level the achievement rate for girls is much higher than that of boys. This pattern was similar in 2005 too. That is, at the end of the nine years of compulsory education cycle, 6.6% of boys appear to drop out of school, whereas only 4.8% girls dropout at the end of same cycle (Ministry of Education, 2005). These statistics shows that a higher percentage of girls enter the senior secondary level of education in Sri Lanka compared to boys. The higher dropout rates for boys compared to girls are further discussed in section 2.3.3 (pp. 28–29).

2.2.8 Special Measures Taken in the Education System

One of the most significant measures taken by the Sri Lankan Ministry of Education is the attention given to the development of children with special needs. For example, every effort is taken to integrate children with special needs in the normal class, in line with the principles of inclusive education as agreed upon at the Salamanca Conference in 1994, and 34 special schools have been established for severely handicapped children (Ministry of Education, 2004a). A special educational unit in the National Education Institute prepares materials for the education of children with special educational needs and also provides training for teachers.

The Ministry of Education has established an informal education unit to identify children not in the school system and to provide alternative educational opportunities. Community centres, especially literacy centres in disadvantaged areas, have been opened to service the education needs of children who drop out of school or who cannot be enrolled in formal schools. Further, the Ministry of Education has a special unit to monitor and coordinated activities related to Special Education (Ministry of Education and Higher Education, 2000).

Children in conflict-affected areas are included in special programs, and donor agencies assist to ensure the inclusion of displaced children, refugee children and orphans in formal education and alternate educational provisions. Remedial programs are available to provide a second chance to children in conflict areas who have lost time at school due to internal displacement. Psychosocial counselling programs have been initiated in schools in the north and east of Sri Lanka to support children affected by posttraumatic disorder (Ministry of Education, 2004a).

2.3 Primary Education in Sri Lanka

In its national context, Primary Education in Sri Lanka refers to a child's education during the first five years in school, or Grades 1–5, and is essentially the important and initial phase of a child's formal education. The minimum approved age for admission to school is five years (Ministry of Education, 2004a). Therefore, the majority of the primary school population is within the range 5 to 9 years of age.

2.3.1 Primary level Curriculum and Grade Structure

Under the new reforms in 1999 (Ministry of Education 2004b), a competency-based curriculum was implemented for the primary Grades. A 'competency' is defined as a combination of knowledge, skills, attitudes and values. For each level of the school system, the National Commission has identified a set of general competencies that should be acquired by all children. The five basic competences that are expected to be acquired by a child during primary school are competencies in communication, competencies relating to the environment, competencies related to ethics and religion, competencies in the use of leisure, enjoyment and recreation, and competencies in relation to 'learn to learn' (Perera, Wijetunge, De Silva & Navaratna, 2004). The primary cycle comprises three key stages. The teaching methodology varies for each of these, and is discussed in Section 2.2.3

2.3.2 The Five Year Plan in Primary Education

With the introduction of the educational reforms in 1999, a 'Five Year Primary Education Plan' was proposed for the period 1999–2003. The goals to be achieved for Primary Education were identified to be:

Goal 1. Ensure the initial enrolment of all five-year-old boys and girls in Primary School;

Goal 2. Ensure an increase in attainment in the essential learning continuum competencies by all boys and girls completing the primary education cycle;

Goal 3. Improve the quality of primary education management at school, divisional, zonal, provisional and national levels;

Goal 4. Promote the equitable allocation of human and financial resources to primary education (Ministry of Education and Higher Education, 2000)

The Five Year Plan also indicated several activities to be accomplished in the area of special education at primary School Level. Some of the activities implemented for the education and development of gifted children include, an orientation program on inclusive education for principals, sectional heads and primary teachers; an awareness

program for parents and the public about disabled children, slow learners and gifted children. Further, the provision of special education programs for gifted children without disturbing the functioning of the normal school system and the provision of special vacation programs to improve the academic abilities of gifted children (strategies c and d under goal 4) (Ministry of Education, 2004b) were also included. Despite these proposals, it would appear, in the personal view of the writer, that to date little attention has been given to the education of gifted and talented children, and there is no systematic attempt to identify gifted children. The only step evident is a study to identify particular gifts and talents of primary level children, carried out by the National Institute of Sri Lanka, (National Institute of Sri Lanka, 2003) and this is discussed in Section 2.4.6.

2.3.3 Empirical Data on Primary Level Education in Sri Lanka

The National Education Research and Evaluation Centre (NEREC) carried out a study in year 2003 to assess the extent of achievement after four years of implementing the new reforms to primary level education (Perera et al. 2004).

Table 2.5 Proportion of primary children achieving mastery of language skills, 2003 (Millennium Development Goals, 2005).

| Skills | First Language Sinhalese/Tamil | | | English Language | | |
|-------------------|-----------------------------------|-----------------|-----------------|------------------|-----------------|-----------------|
| | Sri Lanka | Urban Sector | Rural Sector | Sri Lanka | Urban Sector | Rural Sector |
| Vocabulary | 70 | 81 | 68 | 35 | 48 | 30 |
| Comprehension | 45 | 56 | 43 | 16 | 33 | 13 |
| Syntax | 30 | 44 | 27 | 20 | 34 | 17 |
| Writing | 28 | 40 | 25 | 1 | 4 | 1 |
| percentage | 37 | 51 | 34 | 10 | 23 | 7 |

This situation is clearer, when one observes the detail statistics (Table 2.5 and Table 2.6) found in Millennium Development Goals country report, Sri Lanka (Millennium Development Goals, 2005). The study showed that in First Language Sinhalese/Tamil only 37% of children were able to achieve mastery level (marks 80–100), with a mean score of 62, a quarter scoring less than 42 marks, and about 10%, categorised non-

achievers, scoring less than 20 marks. Similarly, in Mathematics 38% achieved mastery level, with a mean score of 61, a quarter scoring below 38, and 8%, again categorised as non-achievers, scoring less than 20 marks (Perera et al. 2004).

Table 2.6 Proportion of primary children achieving mastery of numeracy skills, 2003 (Millennium Development Goals, 2005)

| Numeracy Skills | Sri Lanka | Urban Sector | Rural Sector |
|------------------------|------------------|---------------------|---------------------|
| Concepts | 45 | 58 | 42 |
| Procedures | 51 | 56 | 40 |
| Problem solving | 34 | 39 | 26 |
| percentage | 38 | 52 | 35 |

Table 2.7 Results of national level assessment in primary Grades (Perera et al. 2004)

| Grade levels | Literacy | | Numeracy | |
|-------------------------|-----------------|-----------|-----------------|-----------|
| | Mean | SD | Mean | SD |
| Grade 5 study (1994) | 61.8 | 21.5 | 45.1 | 18.3 |
| Grade 3 study (1996) | 62.2 | 25.6 | 53.2 | 26.7 |
| Grade 5 study (1999) | 61.3 | 22.5 | 50.3 | 22.2 |
| Grade four study (2003) | 62.3 | 27.3 | 60.8 | 30.3 |

The data in Tables 2.5 and 2.6 showed that, in Language and Mathematical skills, primary students in the rural sector are performing poorly when compared with students in the urban sector. Looking at the data of three previous National level studies of 1994, 1996 and 1999, (as cited in Perera et al. 2004) show that, whilst the achievement in mother language has remained more or less constant, there has been an improvement in Mathematics (see Table 2.7).

Although a study (Dias, 1993) reported that there were no gender differences in achievement in 1993, Perera et al. (2004) reveals that in 2003 girls were leading boys in achievement in both subjects. This difference is also reflected in the repetition and dropout rates, as shown in Tables 2.8 and 2.9.

Table 2.8 Repetition rate by gender, medium of instruction and Grade in government schools of Sri Lanka (Ministry of Education, 2005)

| Grade levels | Sinhalese Medium | | | Tamil Medium | | |
|--------------|------------------|--------|-------|--------------|--------|-------|
| | Male | Female | Total | Male | Female | Total |
| Grade 1 | 0.17 | 0.12 | 0.15 | 0.87 | 0.68 | 0.78 |
| Grade 2 | 0.39 | 0.25 | 0.32 | 1.74 | 1.33 | 1.54 |
| Grade 3 | 0.25 | 0.32 | 2.14 | 1.65 | 1.9 | 0.57 |
| Grade four | 0.57 | 0.27 | 0.42 | 2.62 | 1.98 | 2.31 |
| Grade 5 | 0.77 | 0.37 | 0.57 | 3.08 | 2.12 | 2.16 |

Table 2.9 Dropout rates by gender, medium of instruction and Grade in government schools of Sri Lanka (Ministry of Education, 2005)

| Grade levels | Sinhalese Medium | | | Tamil Medium | | |
|--------------|------------------|--------|-------|--------------|--------|-------|
| | Male | Female | Total | Male | Female | Total |
| Grade 1 | -0.49 | 0.08 | -0.21 | -1.66 | -1.67 | -1.66 |
| Grade 2 | 0.14 | 0.1 | 0.12 | -1.05 | -1.34 | -1.19 |
| Grade 3 | 0.54 | 0.39 | 0.47 | -0.29 | -0.32 | -0.3 |
| Grade four | 0.67 | 0.29 | 0.49 | 0.52 | 0.09 | 0.31 |
| Grade 5 | 0.7 | -0.23 | 0.24 | 2.16 | 1.5 | 1.84 |

Even though these data represent a slight decrease in children who repeat or dropout (Perera et al. 2004), they still do exist in the primary education system in Sri Lanka. Furthermore, at a district level, primary completion rates of more than 95% were found in 18 districts for boys, and in 21 districts for girls (Millennium Development Goals, 2005). That is, more girls than boys are completing their primary level education. As discussed in section 2.2.7.4, (p. 26), even after completing the junior secondary levels, more boys seem to be dropping out than girls (Ministry of Education, 2005). In order to achieve the targets, that is, to decrease the repetition and dropout rates to less than 1% per annum, more has to be done. Background factors such as school, home and pre-school education experiences influence student achievement. It is worth noting that

Perera et al. (2004) found the repetition and dropout rates to be much higher in schools situated in rural areas compared with urban areas.

On the other hand, according to the data in the Millennium Development Goals (2005), there has been a significant increase in the enrolment rate in primary Grades. In 1980, 85% of primary-aged children were enrolled in schools, but, after the ratification of the UN convention on the rights of children and the adoption of the National Action Plan for children, the enrolment rate in 2003 was over 98%. Table 2.10 shows the data on student enrolment in 1995/1996 and 2002.

Table 2.10 School enrolment rates for age 6–10 years in Sri Lanka (MDG Country Report, 2005)

| Period | Male | Female | Urban | Rural | Total |
|-----------|--------|--------|--------|--------|--------|
| 1995/1996 | 95.60% | 95.70% | 96.10% | 95.60% | 95.70% |
| 2002 | 97.10% | 95.60% | 95.90% | 96.40% | 96.30% |

According to these data, enrolment rates do not show significant differences between the genders or sectors. Remarkably, though, in some rural areas such as Anuradhapura, Polonnaruwa and Kegalle districts, 100% enrolment were reported (Millennium Development Goals, 2005). Those who have not entered the school system appear to be children from marginalised groups, including children from low socio-economic background such as rural, plantation and deprived urban pockets, street children, orphans, children with disabilities, children dwelling in coastal areas, children in probationary centres, and children displaced by the conflict in the northern and eastern provinces of the island. The situation has not been helped by the closure of many small schools in poor areas, and slowness in the implementation of compulsory education legislation. At the current rate of increase, Sri Lanka will fall just short of the desired target of 100% enrolment by 2015 (MDG Country Report, 2005), which suggests that further policies are needed to encourage the remaining 2 to 3% of children to enter primary education.

2.4 Gifted Education in Sri Lanka

As discussed under Section 2.2.1, the remains of engineering works, buildings and temples, great works of art and ‘Sigiri graffiti’ are evidence of talents exhibited by ancient Sri Lankans. There is little doubt that present generations of Sri Lankans are also endowed with similar talents. Although there is no formal program in Sri Lanka to identify giftedness in children, many children talented in non-academic fields are identified by teachers, parents and students themselves, and many opportunities is given to develop and exhibit their talents.

Nevertheless, in the current Sri Lankan school system, little attention is given to the identification of intellectual gifts and the development of academic talents. Looking back on our country’s educational history (see Section 2.2.1, p. 17), we find that in 1943 major recommendations concerning the education of gifted children were made by Kannangara, the first Minister of Education. Over 50 ‘Central Schools’ were established and provided with adequate infrastructure facilities and qualified teachers. The Grade 5 scholarship examination was introduced, and those who obtained high marks were provided with free board and lodging as well as a quality education in these Central Schools. Bursaries were also offered to children from low-income families who passed this examination (Ministry of Education, 2004b). However, over the years the quality of education at Central Schools has gradually declined, and at present very few government schools provide board and lodging for students (personal experience).

2.4.1 Opportunities Provided for Intellectually Gifted and Academically Talented Students

The scholarship examination is still conducted, and it is still the only national identification method used to identify intellectually gifted or very able students. Instead of Central Schools, students who perform well in the Grade 5 scholarship examination are offered places in the best national schools, which are well equipped compared with other schools. Once they gain admission, they study with other children in a mixed ability group class and are not provided with special facilities or resources to develop to their talents. There are no special practices in classrooms to identify and develop specific talents further. The only other provision is to give the top ten performers in the Grade five Scholarship examination the opportunity to tour Japan for a week on state expenses.

The scholarship examination has become a crucial step for primary students, parents and teachers. The reason for this is because parents first agonise over getting their children admitted to a Grade 1 class in a prestigious school, and if not successful, they then look forward to the Grade 5 scholarship examination. That is, finding a good school is a concern for both students and parents (Deldeniya, 2000). Poor primary students can be victims in this 'scholarship battle'. From the beginning of their School Life, and especially from Grade 3, students are aware of their parents' expectations and of the importance of the scholarship examination in gaining a place at a leading school. The examination based on subject matter studied from Grade 3 to Grade 5, and teachers strictly follow the set curriculum and do not concentrate on developing any special skills of the child. Parents want their children to concentrate on this examination, and students often have to sacrifice playtime, hobbies, creative work, recreational activities and even extra reading. According to Deldeniya (2000), as well as the researcher's personal experiences, there is still no attempt made to identify giftedness and to develop the talents of these students.

The Grade 5 scholarship examination may also provide an indirect background for student underachievement. Deldeniya (2000) identified a group of students who performed well in their early primary years but who became underachievers because of the pressure of the scholarship examination. She found that the students in her sample who needed challenges did not receive them, but instead had to attend extra classes to do work similar to what was done in the classroom. These children were frustrated from doing repetitive work in school as well as in special classes, their teachers and parents did not recognise, appreciate or value their talents, and they were not allowed to engage in work that they enjoy. Consequently, they disliked school and what they were learning, became rebellious, stubborn and inattentive, withdrew from class work, and experienced underachievement. However, the sample of this study includes only four Grade 5 children.

Saparamadu (2005) also criticised the scholarship examination:

The Grade Five scholarship exam was hailed as a great opportunity for intelligent students of the rural and urban underclass – children of farmers, fishermen, craftsmen, small-time traders, etc – to enter National Schools or other more privileged schools and get an education along with the 'elite'. But does this happen?

Recently I met with 28% of (the 2004) scholarship winners who had scored well above the cut off point to get a place in a very prestigious girls' school. Only two were daughters of farmers. The rest were children of middle-class parents- teachers, school principals, nurses, clerks in government service, men in the army or police, small-time businessmen, the usual main-street shop keepers (Saparamadu, 2005, para13 & 14)

He also noted that most of these girls are not actually entitled to the stipend because their parents' income exceeds the eligible income limit to the stipend (Saparamadu, 2005). In these circumstances, the Grade 5 scholarship examination appears to be an additional burden to children that overlooks subpopulations that should be provided with special opportunities to study in better schools, and to deny opportunities for needy children to gain bursaries. It could therefore be considered, that the process of identification of intellectually gifted and academically talented students in Sri Lanka too, has weaknesses similar to the methods criticised by Richert et al. (1982).

There are few other opportunities in normal schools for students to exhibit their talents in academic areas. Programs that do exist at the School Level include 'Mathematics day', 'Science day' and 'Language day'. The annual Science and Environment exhibitions conducted by the National Science Foundation and Some of the activities implemented for the education and development of gifted children include, an orientation program on inclusive education for principals, sectional heads and primary teachers; an awareness program for parents and the public about disabled children, slow learners and gifted children. Further, the provision of special education programs for gifted children without disturbing the functioning of the normal school system and the provision of special vacation programs to improve the academic abilities of gifted children (strategies c and d under goal 4) (Ministry of Education, 2004b) were also included. Environmental Authority provides opportunities for children to exhibit their talents and concern for the environment (personal experiences).

At secondary level, students participate annually in Mathematics, Chemistry and Computer Science Olympiad competitions. For example, the Sri Lanka Olympiad Mathematics Foundation (SLOMF) conducts the Sri Lankan Mathematical Olympiad for students in Grades 9–13. This competition is open to all students of local and international schools and is held in Sinhalese, Tamil and English, and High Distinction and Distinction certificates are awarded to students who perform well. Selected students

participate in a training pool, conducted by Sri Lanka Olympiad Foundation of University of Colombo, from which a team of six students is chosen to participate in the International Mathematical Olympiad (Sri Lanka Olympiad Mathematics Foundation, online). In the 47th International Mathematical Olympiad 2006, held in Slovenia, Sri Lankan participants won three bronze medals (International Mathematical Olympiad Slovenia, 2006).

Recently, the Ministry of Education began a school-holiday program for students who score high marks in the Grade 5 scholarship examination. In 2006, 200 students from all over the country were selected to attend a five-day camp on Science, Mathematics, English and leadership development. During weekends, the Ministry of Education also offers a special program for the development of Mathematics and Science skills and knowledge, for which students are selected on the basis of achievement test marks in class level tests. Both of these programs will be used to select students to be trained for the Mathematics and Science Olympiad competitions (Wijedasa, Deputy Director Science and Mathematics Division, Ministry of Education, personal communication, August 30, 2007).

2.4.2 Opportunities Provided for Talent Development in Sports

Of all the opportunities provided for talented children in Sri Lanka, those in the area of sports are most remarkable. Athletic meets take place at school, divisional, zonal, provincial, and finally all island level. The Physical Education Division, Ministry of Education, organises all island competitions in many other sports or games, such as cricket, netball, football and badminton, and schools carry out systematic practice outside school time to improve talents in these sports. Children who excel in all island competitions gain opportunities to participate in SARC competitions and other Asian competitions (Jayaweera, personal communication, August 15, 2006).

To provide better development and training for students talented in sports, the Ministry of Education has established 22 of the island-wide Central Schools as special sports schools. Applications are advertised in newspaper, and selection of students is mainly by practical tests, written tests and interviews, with priority given to those who have excelled in provincial and zonal competitions. Successful children, many of whom are from rural areas, are provided with hostel facilities. They attend normal classes during the day, train during the evenings and on weekends, and can participate in competitions at all levels. There are opportunities for foreign training, and free air tickets are

provided to participate in international sporting events (Jayaweera, personal communication, August 15, 2006).

The provision of the sporting facilities extends beyond the school years, and those who receive awards at all-island level may also train as sports instructors.

2.4.3 Opportunities to Develop Talents in the Area of Languages

Each year, schools celebrate Sinhalese Day or Tamil Day, and English day. Language and literature competitions are conducted at school, divisional, zonal and provincial levels, and the Ministry of Education organises the all-island National Languages and Literature Competitions. These competitions include items on poetry, drama, public speaking, debating, singing, creative writing (essay, poetry and short story writing), and are conducted in Sinhalese, Tamil and English. The top students are awarded certificates and prizes (Jayawardena, personal communication, January 25, 2007).

2.4.4 Opportunities to Develop Talents in the Area of Aesthetics

Students in schools where there are specialised teachers are able to participate in art, dancing, music and drama competitions at all levels of the education system. Students who excel in these areas also have opportunities to participate in international competitions (Rajakaruna, personal communication, November 15, 2006).

2.4.5 Other Opportunities for Talent Development

Other ministries also provide annual opportunities for children to exhibit their talents. For example, the Ministry of Health and Nutrition organises poetry, essay and art competitions on behalf of the World Health Day and the Ministry of Environment and Natural Resources organises a competition for Environmental Day. The Ministry of Cultural Affairs and the Narcotics Unit Sri Lanka and several private companies also provide many other opportunities for children to participate in not only annual art, poetry and essay competitions.

Television programs run by Sri Lanka Rupavahini (a government television channel) and many private channels provide opportunities for talent development. From 3:30 to 5:30 p.m., i.e. after school hours, talented children participate, their talents are evaluated and certificates and prizes are awarded. Children present news programs and act as announcers for other programs. ‘Sellam gedara’ (playhouse) is a dramatic program presented by ITN television of Sri Lanka (Independent Television Net work, online; personal experience). It stars are primary and secondary children, who are selected by interview, and shows day-to-day events, concluding with a valuable message for

children. ITN also conducts ‘Lahiru Ranga Madala’ (a variety entertainment program), in which children demonstrate their dancing and singing talents, and ‘Gee Mal Yaya’ (Sing-song) programme. Schools use this program to exhibit their children’s talents. Children can demonstrate their singing talent on other programs such as ‘Lama Gee Saddawa’ (Singsong), (Sri Lanka Rupavahini corporation, online; Personal experience) and ‘Hapan Padura’ (Talents) (EAP Net Work (Pvt) Ltd, online). This is a program to demonstrate musical and singing abilities.

In ‘Muthuhara Lama Samajaya’, children from a village form a society, register with Rupavahini, and take part in a half an hour program in which they present their talents and discuss other activities that they are involved. To participate in any of these programs, teachers should apply through their respective schools (Sri Lanka Rupavahini corporation, online; Personal experience). Such programs help children to develop their giftedness in the psychomotor, creativity and socio-affective domains and exhibit their abilities in bodily-kinaesthetic (dancing), creativity and productive thinking, visual arts, drama, music, media and leadership. This gives the impression that the education system of Sri Lanka provides rich opportunities to develop talents in many fields. However, there are no systematic methods to identify the talented students. Therefore, these opportunities are limited to children whose talents have been identified by themselves, by their parents or by their teachers. Not all parents and teachers possess adequate skills and knowledge to identify the talent potential of their children: they tend to identify gifted children only when they perform at a high level.

The personal experience of the researcher suggests that when educated and economically able parents notice their children’s high potential, they often send them to special classes or institutes to develop the talents. For example, there are many private institutions where children can develop their talent in art, music, singing, drama and dance. As these talents develop, teachers notice and provide opportunities for them to participate in competitions and other events. Some teachers can identify potential in their children, even at a very early stage, but most teachers in Sri Lanka are not able to do so. Therefore, the Sri Lankan school system needs an appropriate program to identify high potential (gifts) in all domains in primary-aged children, and to develop these gifts into high performance (talents).

2.4.6 Studies Conducted in the Area of Gifted and Talented in Primary Level in Sri Lanka

In 2003, following the implementation of the Five Year Primary Education Plan (Ministry of Education and Higher Education, 2000; see above Section 2.3.2, pp.16-17), the National Institute of Education (NIE) carried out a study in the area of gifted education at primary level (National Institute of Education, 2003). The specific objectives of the study were:

- to identify a process to enrich the teaching-learning process, suitable for all children in the primary classroom;
- to train classroom teachers to implement the identified enrichment process;
- to infer the talents developed by children through this enrichment process;
- to identify the talents possessed by children in primary classrooms.

The study collected data from a sample of 480 students from Sinhalese and Tamil medium schools of types AB, 1C, type 2 and type 3 of the Sabaragamuwa province, using classroom and playground observations, interviews with teachers and parents, and checklists. The checklists referred to student characteristics such as willingness to learn, strengths and weaknesses shown during development, social behaviour, attitudes, and how leisure time was spent. Ten such checklists were constructed in order to identify specific talents and skills in the following areas: Academic ability, Creativity, Reading and other language competencies, Mathematics, Physics, Leadership, Art, Music, Drama and Poetry.

The study found that teachers are able to identify students talented in Mathematics, solving mathematical problems by memory, reading, creative writing, composing poetry and songs, singing, creative art, and leadership. Parents are able to comment on artistic abilities and on a child's willingness to engage in learning for a long period. Most parents are not able to identify specific talents of their child, and very few are able to comment on their child's mechanical skills, interest in electronic equipment, ability in sculpture, or competencies in singing and dancing. Responses to the checklists indicated that nearly 12.00% of the children possessed academic talents and some other talents, and 7% of them showed talents in all areas. The NIE study (National Institute of Education, 2003) should be considered to be a landmark in research on gifted education in Sri Lanka because it was the first systematic approach to identify gifted and talented

students. It is worth noting the effort taken by the research team to identify gifts and talents. An enrichment process was developed, and teachers were trained to identify talented students, to implement the enrichment program, and to monitor student progress. The research team visited schools to observe the enrichment process, and discussed with teachers and parents the variety of talents shown by the children during the program. Teachers were given opportunities to share their experiences on the enrichment process and discussed how to improve it. Instead of using available checklists to identify students, the research team, with the help of teachers and parents, developed identification checklists appropriate to the Sri Lankan context by observing students in the playground, interacting with peers, engaged in academic and creative work, and so on.

It is also worth noting that the NIE study could have been improved in four ways. First, data collection could have included peer-nominations and self-nominations as both can contribute rich information to the identification of gifts and talents. Second, after the checklists were developed using a study sample, they were used to identify characteristics of the same children, and so it is not surprising that these students exhibited many of the characteristics in the schedule. For this stage of the research project, it would have been more instructive to use a different sample of children. Third, even though Deldeniya (2000; Section 2.4.1) gives an indication of the extent to which underachievers are present in the Sri Lankan school system, the NIE study does not consider gifted underachievers. Any model to identify gifted and talented children should include characteristics, checklists or identification processes that are inclusive of gifted underachievers. Fourth, it is difficult to identify students with high potential and high ability by using checklists alone. In order to identify highly gifted children, the identification process should include above-level tests and provide necessary interventions to develop above-level skills (Silverman, 1998; Feldhusen 1991; Gross, 2004).

Chapter 3

Conceptual Background To the study

CHAPTER 3: CONCEPTUAL BACKGROUND TO THE STUDY

3.1 Introduction

Currently very few educators cling to a 'straight IQ' or purely academic definition of giftedness. Definitions that are more recent focus on multifaceted conceptions of giftedness or on multiple talents, and on identifying children who have the potential to excel as well as those who have already demonstrated excellence in some area. In the mid 1970s, a new and continuing national and worldwide gifted education movement began (Davis & Rimm, 2004). This was heavily influenced by the publication of three national reports in USA in early 1970s. Of them, the first report, titled *Education of the Gifted and Talented*, in 1972 was to the Congress of the United States. This report is known as 'the Marland report' in recognition of U.S. Commissioner of Education S.P. Marland who spearheaded the report. The report brought gifted education to the forefront of national attention (Colangelo & Davis, 2003, p.7).

According to the Marland report,

Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These children require differentiated educational programs and/or services beyond those provided by the regular school program in order to realize their contribution to self and society. Children capable of high performance include those with demonstrated achievement and or potential ability in any of the following areas, singly or combination: general intellectual ability, specific academic aptitude, creative productive thinking, leadership ability, visual or performing arts, and psychomotor ability (Marland, 1972, p. 5).

The specific feature of this definition is that it recognises not only high general intelligence, but also gifts in specific academic areas and in arts. Further, it highlights the creative, leadership and psychomotor gifts and talents. Further still, this definition reveals the idea that gifted and talented students need 'differentiated educational programs and services beyond those normally provided'. It justifies the importance of the development of gifted programs. The most significant element within this definition is that, by introducing 'demonstrated achievement and/or potential ability', it considers underachieving students. This definition still provides the bases for many of present school programs with various modifications and adaptations (Davis & Rimm, 2004).

Having identified the several issues in educating the gifted and talented children, the U.S. Congress revised the Marland's definition in 1978 and 1988.

The third report by the U.S. Department of Education in 1993 was titled *National Excellence: A case for developing America's Talent*. In this report, several issues faced by America in educating talented students were discussed. America's ambivalence toward intellect, the important of social and emotional issues and the challenges of identifying culturally diverse students are some of them. This *National Excellence* report, which supported the Javits (Gifted and Talented Students Education) Act and promoted the new Federal definition (Colangelo & Davis, 2003, p. 8), will be discussed later in this chapter.

Out of the many definitions and models of giftedness that emerged after the 1970s, Gagné's model (1985) presents the most well articulated theory of giftedness and talent development. A substantial program of research based on this theory has been carried out, and Gagné has continued to refine the overall theoretical model of talent development (Feldhusen & Jarwan, 1993) and has introduced a model which clearly presents the two concepts, 'giftedness' and 'talent', as a 'Differentiated Model of Giftedness and Talent' (DMGT) (Gagné, 1985; 1993; 2003).

3.2 Development of Gagné's Differentiated Model of Giftedness and Talent (DMGT)

The conceptual background to the present study is provided by this model, which clearly describes the distinction between the giftedness and talent. Gagné, in developing this model, has reviewed, criticised and acknowledged the manifold existing literature in the field. Prior to discussing Gagné's model, the literature on other existing definitions and models of giftedness and talented, critiques on them and how Gagné made use of them in developing his DMGT will be discussed in this section.

3.2.1 Critical examination of Renzulli's (1978) model of giftedness and Gagné's attempt to build up his own model.

Renzulli (1978) is well known for his attempt to redefine giftedness. He put forward three criticisms to the Marland definition (Renzulli, 1978). Firstly, for not including any reference to motivation, the factor which he believes to be an essential factor in individuals to express creative and productive gifted behaviours. Secondly, on the "non parallel" nature of six categories of giftedness as two of them (specifically academic

aptitude and visual and performing arts aptitude) call attention to the fields of human endeavour or general performance areas in which talents and abilities are manifested, while the remaining four categories are brought to bear on performance areas. Thirdly, he claimed that the definition could be misinterpreted and misused by practitioners. The reason is that the definition fails to give the kind of guidance necessary for practitioners to avoid any pitfalls encountered when applying the definition (Renzulli, 1978). Reviewing the literature on the determinants of adult eminence in various professional fields (Renzulli, 1978; Renzulli & Reis, 2003) highlights that research on creative/productive people has consistently shown that persons who have achieved recognition because of their unique accomplishments and creative contributions possess a relatively well-defined set of three interlocking clusters of traits.

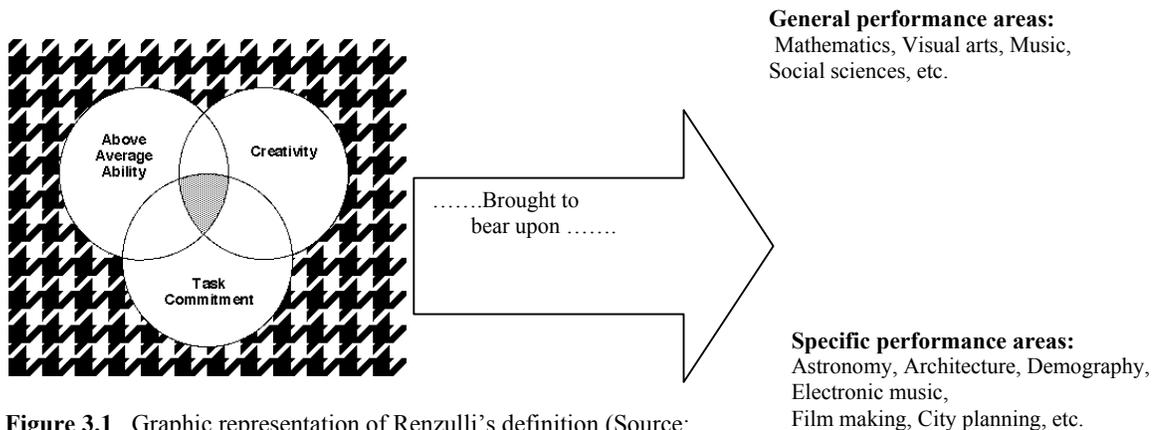


Figure 3.1 Graphic representation of Renzulli's definition (Source:

<http://www.sp.uconn.edu/~nrcgt/sem/semart04.htm>)

Renzulli synthesised his definition as follows,

Giftedness consists of an interaction among three basic clusters of human traits – these clusters being above-average (though not necessarily superior) general abilities, high level of task commitment (motivation), and high levels of creativity. Gifted and talented children are those possessing or capable of developing this composite set of traits and applying them to any potential valuable area of human performance. Children who manifest, or who are capable of developing, an interaction among three clusters requires a wide variety of educational opportunities and services that are not ordinarily provided through regular instructional programs (Renzulli, 1978, p. 261).

He pointed out that no single cluster makes giftedness, but an interaction among three clusters is necessary for the emergence of the creative /productive accomplishment. Further, he highlights, in order for giftedness to become manifest, these three components should be simultaneously present and must take root in some area of performance. Graphic representation of Renzulli's definition is illustrated in Figure 3.1.

The shaded portion of it represents this interaction. He further states that each cluster is an 'equal partner' in contributing to giftedness. He explained the three rings are embedded in a hound's-tooth background to represent personality and environmental influences that contributed to the manifestation of the three rings.

Even though Renzulli has tried to convince readers of the importance, applicability and practicability of his model, Gagné (1985) points out that there are serious questions on the applicability of Renzulli's model in the case of underachieving gifted children or adolescents. Since Renzulli has acknowledged that motivation (or task commitment) is an essential component in his model, concern must be raised about the extent to which the model applies to gifted underachievers. Renzulli acknowledges that, in school settings, if specific abilities are not recognised, if individual cognitive differences are neglected, or if their peers do not accept the gifted children, there may be negative effects on psychological development and scholastic achievement. However, if motivation is an essential component of giftedness, there also needs to be an explanation of gifted underachievement for which demotivation is one of the major reasons (Gagné, 1985).

Renzulli's definition is to be criticised, since it tends to ignore underachieving gifted children, who, through demotivation, the imposition of an inappropriate curriculum, or economic disadvantage, might not have been able to translate their abilities to achievements (Rimm, 1997; Gross, 1999). Gifted underachievers are students who possess considerable intellectual potential, but who perform in a mediocre fashion or worse in the educational setting. Therefore, definitions such as Renzulli's, remove the underachiever from the gifted category since they are not productive and their ability is not effectively expressed (Rimm, 1997). Underachievement is generally revealed by a marked disparity between intellectual ability and academic performance in one or more subjects (Whitmore, 1980). Gagné (1985, p. 104), in discussing the Renzulli model, argued, 'can one say that a child who obtains an IQ score of 130 or more is not gifted because he is not sufficiently motivated to succeed in the class?' Further, he questioned whether there was not a need to make a distinction between the potential indicated by

the psychometric test and its manifestation in the field of performance, for example in academic work (Gagné, 1985).

Jarrell and Borland (1990) criticised Renzulli's model because the inclusion of task commitment and creativity in his conception of giftedness makes it impossible to test it empirically. There seems to be a choice, then, as Gross (1999) points out, between Renzulli's (1978) conception that the motivation is an integral component of giftedness to excel, or Gagné's (1985) belief that motivation acts, at a later stage, as a catalyst in the emergence of talent.

Not only Renzulli's inclusion of 'motivation' but also his identification of creativity as an essential component of giftedness in his model is also criticised by Gagné (1985). Gagné argued that creativity might be regarded as a major determinant of exceptional performance in certain fields of endeavour, but not in all. For example, he pointed out that creativity is not a key ingredient of talented performances in many fields like athletics, business administration, teaching, nursing etc. Thus, Gagné argues that creativity could be considered to be one ability domain, among others, in which giftedness can be expressed (Gagné, 1985).

Sternberg and Lubart (1993) support viewing creative giftedness as a distinct type of giftedness. They suggest that creativity comprises six elements: intelligence, knowledge, thinking styles, personality, motivation and environment. Sternberg and Lubart further stated that a high level of intelligence and motivation can positively enhance creativity and that compensations can occur to counteract weakness in other elements (Sternberg & Lubart, 1993). It is understandable that a high level of intelligence (intellectual giftedness) is not the same as creative giftedness, and that individuals can be gifted without being creative. That is, if creativity is seen to be a major determinant of exceptional performance as Renzulli (1978) described, and then ambiguities arise.

Additionally, Sternberg and Lubart (1993) explained this difference by suggesting that creatively gifted individuals actively engage in divergent thinking as a matter of problem solving. Less creative students tend to use a convergent strategy. People who display intellectual giftedness through convergent thinking may actually find it difficult to employ the divergent strategies relevant to creativity. Further, Sternberg and Lubart (1993) also revealed that academic performance is distinct from creative

performance, and the latter type is arguably more important for societal progress. Gagné too incorporated the creativity domain and intellectual domain as two distinct domains in his DGMT model.

Moreover, the 'Marland definition' (1972) and as well as the 'National Excellence Report' definition (1993) based upon the Federal Javits (Gifted and Talented Education) also regarded creative giftedness as a separate ability domain. Therefore it is fair to accept that creativity is not a compulsory element to be present in an individual to be regarded as gifted (Assouline, 2003) but it can be regarded as a separate domain, as highlighted by Gagné.

Gagné (1985) highlighted another query pertaining to Renzulli's model, in which Renzulli appears to understand ability as intellectual ability and does not differentiate above average ability into separate ability domains. Indeed, the related studies only examined the role of IQ (or its manifestation in academic performance) with respect to exceptional performance by high achieving adults (Gagné, 1985). Gagné (1985) further highlighted that Renzulli (1978) did not respond to the Marland report (1972) which highlighted that those who are capable of high performance could demonstrate achievement or the potential to achieve in areas such as general intellectual ability, leadership ability, visual and performing arts, psychomotor ability, and creative productive thinking. This would imply that above average ability should not be restricted to the domain of intellectual ability as indicated by Renzulli (1978).

Further, unlike Renzulli, Cohn (as cited in Gagné, 1985) also breaks down the general concept of giftedness into several ability domains (for example, intellectual, artistic and social) in his model of giftedness. However, his insertion of diverse subcategories of talent into one or another of the identified ability domains was a major problem with his model. He has overlooked the literature which reveals that emergence in certain fields of talent involves several abilities (Gagné, 1985).

Finally, with the close examination of Renzulli's clarifications, it is understood that he had concerns about developing gifted behaviours in youngsters who have the highest potential for benefiting from special education services (Renzulli, 1998). Because Renzulli's definition was based upon the behaviours of creatively productive persons (mainly adults who had made valuable contributions to the society) these behaviours are adult behaviours. Therefore, his understanding of 'development' may be inappropriate for children and adolescents.

3.2.2 Critiques of Theories and Definitions that Influenced Gagné's DGMT

3.2.2.1 Gardner's (1983/1994, 1999) theory of Multiple Intelligence (MI)

Even though it is not a definition or model to explain giftedness and talent, Gardner's Theory of Multiple Intelligence (MI) further added momentum to broaden the definition of intelligence (Gardner, 1983, 1994, 1999). This theory not only helps to broaden our understanding of intelligence but also alludes to the identification of gifted children and to how to educate them. This theory called for a conception of human abilities that includes multiple areas of intelligence and it added drive to widen to the definition of intelligence and consequently help to understand how to educate children. The theory of multiple intelligences presents a challenge to traditional education that overwhelmingly emphasises scholastic intelligence and assessing giftedness through the use of IQ tests (for example, Renzulli, 1978). Initially, Gardner (1983) demarcated seven relatively autonomous intelligences - linguistic, logical-mathematical, spatial, musical, bodily kinaesthetic, and two areas of person-related understanding, interpersonal and intrapersonal. These have been revised to eight, or possibly nine, intelligences (Karolyi, Ramos-Ford, & Gardner, 2003), Naturalistic intelligence was added and a proposed existentialist intelligence was to be considered for future inclusion.

According to Gardner (1975), more than one type of intelligence will be working within any given domain. For example, activities in the domain of Mathematics can be due to interaction or combination of logical-mathematical and often spatial intelligence. He further explained that there is more than one way to become skilful in a domain. Moreover, according to MI theory, each intelligence is a relatively autonomous intellectual potential capable of functioning independently from the others.

Neuropsychological literature supports this idea. For example, research with brain-damaged adults has repeatedly demonstrated that particular faculties can be lost while others remain relatively or even wholly unaffected (Gardner, 1975). This does not suggest that normally functioning individuals will demonstrate intelligences that work completely independently of one another, but in most cases the intelligences work in concert with one another (Karolyi et al., 2003).

Introducing of the notion of autonomy of intelligences, MI theory has important implications for the field of gifted education. No one can assume a child who performs poorly on an IQ test or a standardised achievement test is not gifted, but the child may

show excellence in activities that rely on one or more of other intelligences. Therefore, Karolyi et al. (2003) suggest educators should first try to identify children's profiles of ability and then find out the best means to support and develop them. Thus, it is understood that Gardner's theory supports the idea of the presence of several types of intelligences. Gagné, (2003, p. 61) highlighted, with regard to cognitive abilities, some of the better-known taxonomies include Gardner's (1983) multiple intelligences (MI). Multiple Intelligence theory leads to a rejection of traditional IQ testing; instead, Gardner emphasised close observation of children and their productivity in natural learning environments such as classrooms, rather than at formal testing sessions in an examiner's office (Karolyi et al. 2003). Even though MI theory has received criticisms from psychologists such as Stanley (1997) and Traub (1990) (as cited in Tannenbaum (2003) it is understood that this theory moved towards appreciating the multifaceted nature of abilities and the use of multiple procedures for identification which caused many changes in later definitions of giftedness.

3.2.2.2 Tannenbaum's (1983) Definition of Giftedness

This is one of the important definitions, which influenced Gagné on constructing his model. Tannenbaum saw giftedness as potential possessed in children, which he defined as follows,

Keeping in mind that developed talent exists primarily in adults, I propose a definition of giftedness in children to denote their potential for becoming critically acclaimed performers or exemplary producers of ideas in spheres of activity that enhance the moral, physical, emotional, social, intellectual, or aesthetic life of humanity (Tannenbaum, 2003, p. 45).

Tannenbaum's definition revealed factors that serve to link promise with adult fulfillment namely: superior general intelligence (e.g. 'g' or general intelligence), exceptional special aptitudes (e.g. aptitude in a specific area), non-elective factors (e.g. personality factors), environmental influence (e.g. parents, classroom, peers, culture, and social class) and chance –the smile of good fortune at critical periods of life.

He further stated these factors combine in a rare blend to produce great performance or productivity (Tannenbaum, 2003, pp. 45). This 'rare blend' produced eight types of developed talents: producer of thoughts creatively or proficiently; a producer of tangibles creatively or proficiently; performer of staged artistry creatively or proficiently; performer of human services creatively or proficiently.

The two areas of superior general intelligence and special aptitudes proposed by Tannenbaum tend to confirm the idea that there is more to giftedness than simply the intellectual domain, which is also reflected in the Marland definition and Gardner's theory, as well as in Gagné's domains of giftedness. Further, Tannenbaum's identification of giftedness as potential and talents as adult accomplishments may have influenced Gagné in the development of his two definitions 'giftedness' and 'talent'. Equally, Tannenbaum's ideas on non-elective factors, environmental factors and chance factors appear to be reflected in Gagné's model. From a close examination of Gagné's model, it is apparent that Gagné was influenced by Tannenbaum's work. However, Tannenbaum noted that whereas gifted and talented students will show potential or promise for advanced learning and creativity, a high-level of creativity and productivity is usually an adult phenomenon (Tannenbaum, 1986, 2003). Still, his definition implies that giftedness in adults corresponds to developed talent, a clear step towards differentiation of the two concepts (Gagné, 1993). Gagné (2004), further highlights that he is surprised that Tannenbaum (1986), just a few paragraphs after his definition (p. 33), switches the gifted label from promise to fulfillment when he states, "Those who have the potential for succeeding as gifted adults ..." (Tannenbaum, 1986, p. 34).

3.2.3 Critiques of Definitions Appearing Subsequent to Gagné's DMGT

3.2.3.1 The Columbus Group (1991) definition

Gagné drew attention to the Columbus Group definition questioning their definition of giftedness and talent. The Columbus Group argued that qualitatively different inner experiences of the gifted child lie at the heart of the phenomenon of giftedness (Morelock, 1995), and highlighted the need for a definition of giftedness that would take into account the 'unusual mental processing that constitutes giftedness' (Tolan, 1994, p. 137).

This definition suggested that,

Giftedness is asynchronous development in which advanced cognitive abilities and heightened intensity combine to create inner experiences and awareness that are qualitatively different from the norm. This asynchrony increases with higher intellectual capacity. The uniqueness of the gifted renders them particularly vulnerable and requires modifications in parenting, teaching and counselling in order for them to develop optimally (The Columbus Group, cited in Morelock, 1996).

Morelock (1996) claimed that there are many research studies supporting the Columbus Group definition. These studies include: Hollingworth's (1942) case studies of children above 180 IQ; Roeper's (cited in Morelock, 1996) portrayals of gifted children; the studies of exceptionally gifted children by Gross (1993, 2004); the case study of 'Jennie' (Morelock, 1996) and the study of profoundly gifted children (IQ > 200) and their families (Morelock, 1996). According to Morelock (1996), further support has come from clinical studies by Lovecky, Silverman, and Terrassier.

However, Gagné (1997) argued that this definition suffered from at least four major flaws. These included the use of the words such as asynchronous development instead of outstanding human abilities as the essence of giftedness; the introduction of vaguely defined concepts such as heightened sensitivity, inner experiences, and vulnerability; the affirming of the qualitatively different nature and uniqueness of gifted individuals yet the use of numerous quantitative expressions to describe these characteristics. Finally, Gagné emphasised that this definition does not specify the extension of the concepts (Gagné, 1997).

3.2.3.2 The Morelock (1996) definition

Unlike the Columbus group definition, Gagné claimed that Morelock (1996) had distinguished the concepts of giftedness and talent. In her definition, she stated that 'giftedness' should be used to identify the particular form of asynchronous development referenced in the Columbus Group of definition, and 'talent' should be used to refer to multi-leveled potential for domain-specific creative-productivity in the world, which can be fostered through appropriate identification and environment support (Morelock 1997, p. 10).

However, Gagné (1997) stated that, even though Morelock tried to differentiate the two concepts, there is still confusion in view of the fact that she defined both giftedness and talent as potential. He further added that the definition destroys the normative meaning of the concept 'talent' by endorsing a 'talent for all' ideology, and that by including creative productivity as a necessary component of talent she unduly reduces the breadth of the component 'talent'.

3.2.3.3 *The Javits Act (1993)*

An important revision of the Marland report attempted to address the issues of America's ambivalence toward intellect, social and emotional development of gifted and talented students, and the challenges of identifying gifted and talented students from culturally diverse backgrounds. This 'National Excellence' report was promoted as, and essentially became, a new federal definition in the form of the Javits Act, and reads:

Children and youth with outstanding talent perform or show the potential to perform at remarkably high levels of accomplishment when compared with others of their age, experience or environment. These children and youth exhibit high performance capability in intellectual, creative and/or artistic areas, possess an unusual leadership capacity or excel in specific academic fields. They require services or activities not ordinarily provided by the school. Outstanding talents are present in children and youth from all cultural groups across all economic strata, and in all areas of human endeavour (U.S. Department of Education, 1993, p. 3)

This definition acknowledges the presence of several ability domains or different areas of giftedness. More significantly, it considers the giftedness of children according to experience and in comparison to peers in their environment, and acknowledges that giftedness occurs in all cultures and across all economic strata.

3.2.3.4 *Sternberg's Triarchic theory*

Sternberg (1997, 2003) also argued for the presence of several ability domains rather than one ability domain represented by a single measure of ability. He acknowledged that a single IQ score cannot represent intellectual giftedness, and instead identified three main kinds of intelligence. These are analytic giftedness in the academic talents that are typically measured by IQ tests; synthetic giftedness, referring to creativity; and practical giftedness that involve applying analytic and/or synthetic abilities successfully to every-day practical situations. He suggested that most the people possess some blend of these three expressions of intelligence, and that this blend can change over time. Thus, giftedness was viewed as a well-managed balance of the three abilities (Sternberg, 2003).

3.3 Gagné's Differentiated Model of Giftedness and Talent (DGMT)

The above discussion on existing definitions and models, and critiques of them, reveals that a productive and adequate model of giftedness and talent should undoubtedly define the terms 'Giftedness' and 'Talent'. Moreover, as Gagné (1985) noted, such a model of giftedness and talent should have a multidirectional relationship between

abilities and talents rather than a bi-directional relationship. This means, on the one hand, that a given ability can contribute to excellence in several fields of talent, and, on the other hand, that a profile of diverse abilities can account for the emergence of a particular talent.

Responding to the existing definitions and models, and to their critiques, Gagné (1985) introduced his 'Differentiated Model of Giftedness and Talent'. Indeed, the essence of Gagné's (1985) model is a dichotomy between domains of ability and fields of performance, respectively corresponding to giftedness and talent.

Gagné's (1985, 2003) Differentiated Model of Giftedness and Talent (DGMT) can be regarded as a developmental theory of the transformation of gifts into talents. It was first presented in 1985, and revised and added to since then to define giftedness and talent clearly. This model provides the conceptual background to the present study because it clearly describes the distinction between giftedness and talent. Not only does it accept the multifaceted nature of both giftedness and talent, but it also presents the heterogeneous nature of gifted and talented children. The DGMT model is illustrated in Figure 3.2.

The DMGT defines the term giftedness as follows:

Designates the possession and use of untrained and spontaneously expressed natural abilities (called aptitudes or gifts), in at least one ability domain, to a degree that places an individual at least among the top 10 percent of age peers. Thus, gifts are essentially outstanding natural aptitudes (Gagné. 2003:60).

By contrast, the term talent:

Designates the superior mastery of systematically developed abilities (or skills) and knowledge in at least one field of human activity to a degree that places an individual at least among the top 10 percent of age-peers who are or have been active in that field or fields (Gagné. 2003:60)

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

Figure 3.2 Gagné's Differentiated Model of giftedness and Talented

(<http://www.curriculumsupport.education.nsw.gov.au/policies/gats/assets/pdf/poldmgtcolrdiag.pdf>, 2003)

By examining these two definitions, three common characteristics could be identified. Both refer to human abilities, both target individuals who differ from the norm or average and both refer to individuals who are exceptional because of their outstanding behaviours (Gagné, 2003).

3.3.1 Gifts and Talents

This DMGT model proposes five aptitude domains: intellectual, creative, socio-affective, sensorimotor and 'others'. In brief, Gagné (1985) has incorporated the ideas from concept of multiple intelligences borrowed from the Gardner definition of multiple intelligences (1983), the Marland definition as well as the US definition of giftedness (which is the revision of the Marland definition) and from Tannenbaum (1983).

These domains further subdivided into several subcategories (More details of these domains are illustrated in Figure 3.2 under natural abilities).

This is in contrast to Renzulli's (1978) model, as criticised by Gagné (1985), in which only one ability domain, the above average ability, is incorporated. Thus, by careful incorporation of key ideas from other definitions, Gagné has added much to strengthen his model.

Gagné's identification of a separate category or domain for creative abilities (Gagné 1985) is one of the major divergences between Gagné's model and Renzulli's (1978, 1979) model. In Gagné's model, creativity is not an essential factor for giftedness and talents to emerge as it had been in Renzulli's model. However, according to Gagné 'creativity' could contribute to the emergence of several different talents (examples are artistic talent, video games).

In the course of their development, children demonstrate these natural abilities through the various tasks they carry out. These include the intellectual abilities needed when learning, for example, to read, to speak and to understand mathematical concepts. Also the creative abilities involved, for example, in solving various technical problems and in producing original work and the physical (sensorimotor) abilities involved, for example, in music production, sports or carpentry; and the social abilities children use, for example, in their daily interaction with peers, teacher and parents. These natural abilities are evident in all children to varying degrees. When the level of expression is outstanding, the child could be considered as gifted. Such high abilities or gifts can be observed easily in young children, but also gifts still manifest in older children, even in adults (Gagné, 2003).

3.3.2 Learning and Practicing

As defined in DMGT model, talents progressively emerge from the transformation of these aptitudes (gifts) into the well-trained and systematically developed skills characteristics for a particular field of human activity. He further specifies that these natural abilities have a clear genetic substratum and can be observed in every task children are confronted with in the course of their development and schooling (Gagné, 2007). In this model, natural abilities or aptitudes act as the 'raw material' or the 'constituent elements' of talents (Gagné, 1993). Hence, talent necessarily implies the presence of well-above-average natural abilities: one cannot be talented without first being gifted. Nevertheless, the reverse is not true. The well-above-average natural abilities could remain simply as gifts without being translated into talents. Academic underachievement among intellectually gifted children is an example of such

phenomenon. These underachievers show themselves to be gifted, that is, the possessors of exceptional abilities, without having evidence of their giftedness in any academic talent. Gagné identifies these individuals as gifted intellectually, but not talented academically (Gagné, 1985). Thus, Gagné's model could be applied to explain the existence of gifted underachievers.

Talent development is noticeable when an individual engages in systematic learning, training and practice. Variables act as catalysts that impact on talent development and the expression of talent. Gagné emphasised two types of catalyst, intrapersonal and environmental, that facilitate (or hinder) this talent development process. He stressed that the two catalysts are not constituent elements of talent but actively contribute to this developmental process.

3.3.3 Intrapersonal catalysts

Intrapersonal catalysts include human characteristics, which are outside the domain of abilities. The intrapersonal catalysts are subdivided into physical and psychological factors, which are under the partial influence of the genetic endowment.

According to Gagné, motivation and volition are the most important psychological factors; since they play a crucial role in initiating the talent development, guiding it and sustaining it through obstacles, boredom and occasional failure. As discussed in the previous section, in contrast to Gagné, Renzulli (1978, 2000, and 2003) recognised the motivation (which he describes as task commitment) as one of three major essential components for emergence of giftedness. Nevertheless, Gagné (1985) criticised Renzulli's incorporation of motivation as an essential component to be present for the emergence of giftedness. Instead, in Gagné's model, motivation has lost little of its importance, and it has become one of the essential prerequisites for transforming giftedness into talent. Temperament and personality traits, which have a hereditary basis, also make significant contributions to support or stimulate, or slow down and even block, talent development.

3.3.4 Environmental catalysts

Gagné (1997, 2003) noted that environment exerts its positive or negative impact in many different ways. In Figure 3.2, four different environmental inputs are illustrated. The milieu or surroundings exert their influence both at macroscopic level (e.g. geographic, demographic, sociological) and at a more microscopic level (e.g. size of family, socio-economic status, etc.).

Many different persons, including parents and teachers, and also siblings and peers, may exert positive or negative influences on the talent development process. The provision or non-provision of special programs such as gifted education programmes, either within or outside the school, can have a positive or negative influence on the process of academic development. Finally, Gagné added that significant events (e.g. the death of a parent, winning a prize or award, suffering from a major accident) could influence strikingly (in a positive or negative sense) the development of talent.

3.3.5 *Chance as a catalyst*

In an addition that reflects the Tannenbaum (1983) model, Gagné has added chance as a contributing factor to talent development. Originally, it was introduced as a fifth element among the environmental catalysts. Children have no control over these factors. Examples for such factors are the family's socio-economic background, the quality of parenting they received, and the transmission of hereditary characteristics. Socio-economic backgrounds and parenting style have a great influence on a child's development (Bandura, 2003). People learn through observing others' attitudes, behaviour, and the outcomes of those behaviours: 'Most human behaviour is learned observationally through modelling: from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information serves as a guide for action' (Bandura, 2003). Thus, it is understood that Gagné's influence of chance factors on learning could be explained by Bandura's social learning theory. For example, children who are adopted into rich socio-economic backgrounds and into families with high-quality parenting styles have an opportunity to experience more positive role models towards learning, which may develop optimistic attitudes towards learning, resulting in intense cognitive abilities or talents.

Even though Gagné (2003, 2007) stated that the development and level of expression of giftedness is partially controlled by the individual's genetic endowment, he highlighted the effect of environment on talent development (discussed previously). Moreover, Bransford et al. (1999) also explain that the functional organization of the brain and the mind depends on and benefits positively from such experiences. They note that development of the brain is not merely a biologically- driven unfolding process, but also an active process that derives essential information from experience (Bransford et al. 1999).

Individuals gain such experiences by interaction with the environment. These findings highlight the phenomenon of ‘nature-nurture’ interaction and the importance of the environment on intellectual development, and add strength to the role of catalysts in Gagné’s talent development process.

Similarly, the research findings of Lepper and Cordora (1992) suggest that when children enjoy learning they will become intrinsically motivated and learning will be enhanced. This is similar to Gagné’s understanding of motivation as a catalyst to intellectual development. This research also provides important insights into specific procedures that teachers can use to enhance children’s intrinsic motivation.

3.3.6 Sub-categories within gifted or talented populations

Finally, Gagné describes a new system of categories to subdivide the gifted and talented populations into more homogeneous subgroups. Based on the metric system, each of the five levels, including the minimum threshold, selects the top 10 percent of the previous level. These sub groups are labelled as mildly (10%), moderately (1%), highly (.1%), exceptionally (.01%) and extremely (.001%) gifted and talented (Gagné, 1998, 2007). Existence of such categories could be explained by Gagné’s model itself. This may be due to the strength of the talents developed due to the different intensities of interactions among gifts, various catalysts and the talent development process.

There is an interesting anomaly in Gagné’s thinking. The percentage he uses for each of gifts and talents is 10%, applied to each domain and to each field. Consequently, Gagné indicates that ‘the total percentage of gifted and talented persons probably exceeds 30%’ (Rossum & Gagné, 2006, p. 284). Or again, using the 10% as the threshold of excellence for any ability domain, Gagné (1998b, p. 123) indicates that ‘it is not unreasonable to expect that close to two thirds (60–65%) of students could be labelled gifted or talented in regular classrooms.’

The more we broaden the definition of any area of exceptionality, the more care we must take to acknowledge levels, or degrees of the condition. Just as a child with a severe level of intellectual disability requires a different educational response from that which would be offered to a child with a mild or moderate level of same condition, a highly or exceptionally gifted child requires a very different interactive response from that which might be offered to a moderately gifted child (Gross, 2003). Thus, along with Terman and Hollingworth, Gagné should be acknowledged for his inclusion of levels of

giftedness so that educators might extend their attention to all types of gifted individuals during the identification process and when providing for their development.

3.4 Summary

By examining the above literature on definitions and conceptions of giftedness, it is fair to conclude that giftedness is a multidimensional concept rather than a unitary inherited trait of intelligence, and that there is an educational advantage to be gained from differentiating the two interrelated terms giftedness and talent.

Gagné introduces four other factors together with gifts and talents that are involved in the talent development process. The development of talent, or high achievement, will occur to its maximum only when the giftedness, interpersonal factors, environmental factors, and the learning process interact with each other to their maximum capacity. Therefore one can expect that the level of talent may vary according to the extent of the interaction between these factors. Thus, the model explains the presence of different categories of gifted and talented students, that is, the heterogeneous nature of the gifted and talented student group should be expected.

Further, it explains that, if the interaction of the three factors does not occur to a considerable level (even though an individual may be gifted in a particular domain), one could not recognise the student as gifted or talented. This is because in such instances the student does not show a significant level of achievement in the particular domain, resulting in underachievement. This shows that Gagné's model clearly explains the phenomenon of underachievement.

The study carried by National Institute of Education in 2003 reveals that in the primary education system of Sri Lanka there are gifted students with different level of abilities. Furthermore, previous studies (Perera, Wijetunge, De Silva, & Navaratne, 2004) conducted in Sri Lanka claimed that there are underachievers in the Sri Lankan school system too. Gross (2003) emphasises that within the Gagné model it is the responsibility of the community to seek out the children who are gifted but not talented and assist them to realize and recognize their gifts. She also notes that assisting those talented students who are already performing at high levels is important.

There is no doubt that "an education system that adopts the Gagné definition commits itself to identifying high potential in students and creating an educational and social environment which will develop that potential into high performance" (Gross, 2004, p. 27).

Unlike the writers of many other prevailing definitions or conceptions of giftedness and talent, Gagné has continued to refine his model in response to recent research data and the theoretical literature. The Differentiated Model of Giftedness and Talent reveals the nature of giftedness and levels of giftedness, and directs us not only to identify high achievement, but also to seek out high potential and to do something real about translating this potential into high performance. Thus, Gagné's DMGT should be seen as a dynamic model rather than simply a definition.

Renzulli too, has introduced his definition as an operational one because it meets three important criteria. First, it is derived from research studies dealing with high achieving adults. Second, it provides guidance for the selection and/or development of instruments and procedures that can be used to design a process of identification. Finally, the definition provides direction for programming practices that will capitalise on gifted behaviours and draw our attention to learners with special needs (Renzulli, 1978).

However, as discussed earlier, Renzulli's model has been the subject of much criticism, for three main reasons. First, it appears to overlook the findings of recent research and theory (as discussed in this section earlier). Second, it has focused on adult behaviours, which raises the question of the extent to which it is applicable to the developing minds of children. Third, it appears to gloss over the presence of gifted underachievers.

In these circumstances, the researcher identified that Gagné's Differentiated Model of Giftedness and Talent would provide a strong conceptual framework for the construction of a fruitful identification model to identify gifted and talented students in primary level Grades in the school system of Sri Lanka.

Accordingly, since the current study has concentrated more on the intellectually gifted and academically talented children, the researcher has introduced her own definition of the terms ‘intellectually gifted students’ and ‘academically talented students’, based on Gagné’s model, as follows:

Intellectually gifted students

are the students who possess and who have the potential to use untrained natural abilities in the intellectual domain to a degree that places the individual at least among the top 10 percent of age peers (modified from Gagné, 2003:60).

Academically talented students

are the students who have well developed abilities or skills in a particular academic field, to a degree that the individual could be placed at least among the top 10 percent of age peers who are or have been active in the same academic field (modified from Gagné, 2003:60).

Chapter 4

Literature Review

CHAPTER 4: LITERATURE REVIEW

4.1 Introduction

The aim of this literature review is to establish what an identification model should comprise so that it is appropriate to identify gifted and talented students from the Primary level education system of Sri Lanka. Therefore, in this chapter the relevant theoretical and empirical literature on identification of gifted and talented students will be reviewed in order to determine appropriate identification methods, which fulfil the basic and essential requirements to formulate a comprehensive model that can be used to identify gifted and talented children from primary level Grades of Sri Lanka. Such a comprehensive model should include procedures to identify diverse multiple abilities and potential, including abilities and potential in multiple domains of development. Such a model should include measures to identify abilities and potential in children from all backgrounds, such as diverse linguistic, socio-economic, and cultural backgrounds, and from special populations. Hence, the relevant theoretical and empirical literature will be reviewed and presented under the following titles in this chapter.

1. Early history of identification of gifted and talented children
2. Recent identification strategies of giftedness and talent
3. Identifying gifted and talented student from special populations
4. Dynamic testing
5. Above-level testing

4.2 Early History of Identification of Gifted and Talented Children

Identifying and educating gifted youth has intrigued almost all societies in recorded history. In many past cultures, children who were brilliant and of full promise or found to have extraordinary talents were treasured. They were called, for example, ‘geniuses’ or ‘prodigies’, and their gifts were celebrated and nurtured. They were regarded as rare and priceless gems to be valued and polished until their brilliance shone in all radiant glory, brightening the lives of all around them (Fiedler, 1999:401-441). However, the

past and present literature of gifted education shows that the judgment of giftedness depends upon the values of a particular culture. For example, Meyer (cited in Davis &

Rimm, 2004) asserts that in ancient Sparta military skills were so valued that all boys, beginning at age seven, received schooling and training in the arts of the combat and warfare. In such a culture, 'giftedness' was defined by outstanding skills in combat, warfare and leadership. Babies with physical defects were flung off a cliff.

Nevertheless, in contrast to ancient Sparta, Athenians highly valued education, and the social position and gender which determined educational opportunities. Upper class boys were accorded the privilege of an education at a special academy. 'Sophists' imported from other nations instructed older students (young men) in logic, rhetoric, politics, grammar, and mathematics. Apparently, only Plato's Academy provided opportunities for young girls and boys based on intelligence and physical stamina, not on social class, without charging any fees. In Rome, law and administration, architecture and engineering were the disciplines most valued. There, a more liberal attitude towards women enabled several gifted women to emerge (Davis & Rimm, 2004).

In Early China, gifted children and youth were valued, notably in the Tang Dynasty. Not only were gifted children and youth valued, but also it was understood that national prosperity could benefit from nurturing the most intellectually able. Therefore, child prodigies were taught in the imperial court where their gifts were both recognized and cultivated. Further, China accepted a multiple-talent concept of giftedness, and valued literary ability, leadership, imagination, and originality, and such intellectual and perceptual abilities as reading speed, memory, reasoning, and perceptual sensitivity. It was also recognized that some precocious youth would grow up to be average, some average youth would later show gifts, and the true child prodigies would show gifts and talents throughout their lives. Furthermore, they realized that even the most gifted would not fully develop their abilities without special training, and recognized that education should be available to all children, but they should be educated differently according to their abilities (Tsuin-Chen, cited in Colangelo & Davis, 1993). In ancient China, an examination (keju) was held every three years to find gifted scholars and to categorise them into three levels - the top scholar, the second scholar and the third scholar, before they assumed national duties for the ruling class (Chan, 2007).

Compared to China, in early Japan during the Tokugawa Society period (1604-1868), Samurai children were given training in Confucian classics, martial arts, history, composition, calligraphy, moral values, and etiquette and commoners (poor children) were taught loyalty, obedience, humility, and diligence (Colangelo & Davis, 1993). On the other hand, there were only few private academies for intellectually gifted children, of both Samurai and Commoners (Davis & Rimm, 2004). Despite its place as one of the most advanced countries in the world, gifted education does not officially exist in Japan. However, opportunities exist for gifted children (Matsumuna, 2007).

Davis and Rimm (2004) claim that early in America's modern history, even though there were compulsory attendance laws and schooling became available for all students, concern for the education of gifted and talented children was not great. Some gifted youth were accommodated only in the sense that attending secondary school and college was based on both academic achievement and the ability to pay fees. In early Europe, even though not much was said about the giftedness on surface, the structure of the European national school system was openly geared to identifying and educating the most intellectually able. Therefore, ability grouping, particularly, has been a traditional way to identify able learners and guide their education (Passow, 1997).

The formal identification of gifted students and the provision of an education appropriate to students' abilities are relatively recent phenomena in Australia. The first national focus on the special needs of gifted students took place in 1983 when educators and researchers gathered at the first Australian conference in Melbourne. Initially, the criteria used to identify gifted and talented was IQ tests which relied on language skills, speed of mental processing, memory, recall and logical and spatial thinking (McCann, 2007). According to Gross (2003), gifted education in England did not gain momentum until the late 1990s.

In Sri Lanka, until 1943 there were no traces of gifted programs or any special attention given to academically higher achievers. In 1943, the scholarship examination was introduced at Grade 5 (primary level) to select academically higher achieving students (Ministry of Education, 2004a). For primary children, this is the only criterion to persist other than the class achievement tests used to identify intellectually gifted or academically talented children. However, class achievement test marks are not used to

select students for any special provisions, but only for select the prize winners of the year and to promote to the next Grade (This is discussed in more detail in Chapter 2).

4.3 Recent Identification Strategies of Giftedness and Talent

4.3.1 Philosophies of Identification of Gifted and Talented Children.

Historically, the identification of academically gifted and talented students has been closely linked to intelligence tests (Brown, Renzulli & Gubbins, 2005). During the early part of the 20th century, Stanford psychologist Terman (1925) focused on developing and administering the Stanford-Binet Intelligence Scale, which was a modification of the Binet-Simon tests. Terman studied gifted and talented children who scored at the top 1% of the population on the Stanford-Binet, that is, whose measure IQ was greater than 135. In the minds of many, the phrase ‘gifted and talented’ was then equated with an intelligence test score of at least 135. A child was labelled as gifted and talented by a cut-off score on an intelligence test, which promoted an absolutist view of giftedness. All other children who did not achieve the cut-off score were viewed as ‘not gifted’. Terman made many comparisons in his study in 1940 to discover how the subjects of 170 IQ or above differed from the other members of the gifted group as a whole. For example, even though he found that the subjects of his high IQ group were in higher occupational status, nevertheless there were both men and women of highest IQ whose occupational histories were much less satisfactory than might have been expected from their intelligence ratings. Further, he determined that family values and parents’ education as major factors for the differences between the most and least successful gifted adults (Terman & Oden, 1947).

Gross (2004, p. 19) noted that social and emotional issues associated with the high intellectually ability children in Hollingworth’s study were highly congruent with the findings for highly gifted students in Terman’s studies. Jackson and Peterson (2004) also commented on these social and emotional issues of highly gifted students, in particular that they could affect the performance or success of some members of the highly gifted group who have not achieved to a level expected by IQ scores in Terman study.

On the other hand, Winner (1996) affirms that ‘global intelligence’ is a myth, especially if it derives from tests of general intelligence. She regards IQ tests as measuring a narrow range of skills that are relevant only to mastering school curricula. Breaking away from a reliance on tests to determine abilities is not easy. Some people may think

that using an achievement test, rather than an intelligence test, makes a difference (Brown et al. 2005). However, several researchers, including Sternberg (1985) and Sattler (2001), believe that intelligence and achievement tests are so similar that including achievement tests limits the attempt to broaden conceptions of giftedness. IQ tests still dominate North America (USA and Canada); England is now relying on similar tests called Cognitive Ability Tests (CAT tests).

The Marland Report (1971) delineated six areas of giftedness: general intellectual ability, specific academic ability, creative or productive thinking, leadership ability, visual and performing arts and psychomotor ability. This influenced the moving of identification practices away from identifying all-purpose general giftedness in the direction of identifying specific talents or aptitudes (Feldhusen & Jarwan, 1993). Hence, an expansion of giftedness concept beyond the IQ score was visible.

Another kind of expansion was visible in the view of Tannenbaum (1983) by his five-factor conception (both cognitive and non-cognitive) of giftedness. He suggests that these 'five factors have to interweave most elegantly: superior general intellect, distinctive special aptitudes, supportive array of non-intellective traits, a challenging and facultative environment, and the smile of good fortune at crucial periods of life' (p. 29). He mentioned that each of these factors consists of static and dynamic sub-factors, the minimal essentials or threshold levels vary with every talent domain, and further, the five factors interact in different ways for each separate talent domain. Thus, no single set of criteria can be equally effective and efficient for identifying giftedness (Tannenbaum, 2003).

Sternberg (1999), who also regards intelligence more broadly, has proposed his theory of 'successful intelligence'. The concept distinguishes between being smart at school as against dealing competently with the wider world of real life. According to Sternberg, IQ scores reveal abilities that are 'general only with respect to the academic or analytical aspect of intelligence. Once one includes creative and practical abilities in an assessment, the general factor is greatly diminished or disappears' (p.16). In other words, conventional methods of measuring intelligence tell part of the story quite well, but only part of the story.

Similarly, Gardner (1983), in his popular theory of 'Multiple Intelligences' (MI), promoted the existence of fairly discrete mental strengths, or 'intelligences', which he speculated through logical impression rather than on the basis of formal data collection

and analysis. He has drawn attention away from the general ability factor (Spearman's g).

Since the existing measures of aptitudes, especially in non-academic domains, are weak in internal consistency and predictive validity, Gardner (1997, p. 123) preferred 'mechanisms that allow individuals to show what is they can already accomplish in a domain'. This could be done by closely observing children and their productivity in natural learning environments, such as classrooms, rather than at formal testing sessions in an examiner's office (Ramos-Ford & Gardner, 1997). Consequently, the identification of the gifted for academically oriented programs has become more complex and difficult as the focus of attention moves beyond traditional IQ definitions of giftedness to broader perspectives which view giftedness as a multifaceted process (Heller 1991; Necka 1991).

Richert (2003) criticized criteria such as teacher recommendations, Grades, and standardized tests most frequently used by schools to measure academic achievements, since these criteria violate educational equity by consistently excluding large proportions of poor and culturally diverse gifted students. Moreover, these identification data often screen out sub-populations that especially need programs, such as underachieving, learning-disabled, handicapped, and culturally diverse students with gifted potential. Poor students are most consistently screened out of gifted programs, and their disadvantage cuts across every other sub-population.

Young gifted children from middle or upper socio-economic levels are provided ample opportunities to develop their talents through parental interaction, toys, and outings. Compared to them, young gifted children from economically disadvantaged homes may receive few opportunities from their parents or caregivers to develop their talents. Because of that, gifted children from economically disadvantage homes may not demonstrate their giftedness as well as peers from more economically advantaged homes (Sisk 1998, pp. 73-89). Therefore, the rural and economically disadvantaged children are not as likely as middle class children to be reading are, may not know numbers and colours, and may not meet the teacher's expectations in terms of fine motor skills and attention. In addition, they may not have positive attitudes towards school. Also may have inability to focus on long-term goals (Spicker & Southern, 1998, pp. 147-164).

Richert (2003) further proposed that the trend to use data from a variety of sources can actually be counter productive to address the above issues in identification of gifted and talented students. Nevertheless, many practitioners use combinations of tests scores (IQ, achievement, or both), teacher observations, and sometimes parent observations, in the identification process. Richert (2003) stated that statistically unsound but widely used practices of giving equal weighting to data from multiple sources, or even using weighted-scoring procedures, was strongly criticized by a national panel of experts. She explained that there is a tendency to screen out creative, underachieving and disadvantaged students (which include the poor and culturally- diverse students) who might show giftedness in a single area by using these types of combinations of data. Combining data inappropriately tends to identify Jacks-of-all-trades, and may eliminate the ‘masters of some’ and the current ‘masters of none’ – those underachieving students who particularly need a gifted program to develop their un-manifested potential (Richert, 2003).

Thus, according to Richert (2003), neither creative nor disadvantaged students should be excluded from a program solely based on the test scores if there are other indicators of exceptional potential (such as teacher-, parent- or self- nominations). Students should be able to qualify for a program by scoring high on any of several measures, rather than on most of them.

Both Kaniel and Reichenberg (1990) and Ford (1996) have drawn attention to the difficulty related to identifying high academic potential in disadvantaged groups. Kaniel and Reichenberg (1990, p. 9) identified the distinction between disadvantaged- and mainstream-gifted is that superior abilities are not revealed in psychometric tests of the disadvantaged-gifted.

Most educators realize that the language and content of ability-achievement tests are biased against culturally- and economically-deprived students (Davis & Rimm, 2004). The Carnegie Corporation’s 1996 report, *Years of Promise* (cited in Davis & Rimm, 2004), highlighted the seriousness of the underachievement problem, at least in the United States, and it suggested that underachievement is not a crisis of a certain group, that it is not limited to poor, but that many middle class and upper-income children are also falling behind academically.

Some consideration should be given to children with learning disorders whose learning disabilities and giftedness can mask each other. These children are often referred to in the literature as ‘twice exceptional’ or having dual exceptionality. In such situations, typical assessment approaches would fail to identify either the giftedness or the learning disorder. Therefore employing multiple approaches to assess giftedness would be more reasonable (Karolyi, Ramos-Ford & Gardner, 2003, p. 105). Additionally, Steele (1997) and Steele and Aronson (1995), highlighted the stereotype effects or threat on test performance (that is, test performance is affected by a stereotyped threat when a member of a racial or ethnic group that has been stereotyped as having lower than average abilities in a given area knows that those abilities are being tested).

The ceiling effect is another problem related to the use of IQ and achievement test scores in identification of giftedness. Ceiling effect refers to the lack of an adequate range in the difficulty of test items. When a test with ceiling effect is used to for the identification of gifted children, it would not reveal the full range of their abilities, especially with the highly gifted children (Silverman, 1998).

In addition, the following literature highlights some significant features that should present in a perfect identification procedure. For example, identification processes in gifted education should be based on the best current conceptions and theories of human aptitude, talent, and abilities (Feldhusen & Jarwan, 2000). Therefore, the identification (thus subsequent programming/planning/provision/intervention) of gifted students should be based on a comprehensive and pluralistic definition that includes diverse potential among all demographic and ethnic groups (Richert, 2003). Thus, a clearly defined but broadened conception of giftedness should be adopted (Davis & Rimm, 2004).

Most authors now agree that to identify giftedness it is appropriate to use data about cognitive, creative, and other abilities from multiple sources (Richert, 2003). However, this should be understood to be multiple alternative criteria, and not multiple required hurdles to identify giftedness (Davis & Rimm, 2004). Since giftedness may be expressed in different forms in different cultural or socio-economic groups (Rimm & Davis, 2004), it may be necessary to ‘re-norm’ the academic achievement and other instruments to overcome bias against various disadvantaged groups, particularly the poor and the culturally diverse (Richard, 2003).

Rimm and Davis (2004) emphasise that the identification process should promote inclusiveness rather than exclusiveness. Richard (2003) noted that this would help to identify up to 25 percent of a school population so that if errors are made, they are errors of inclusion rather than exclusion. The NSW Department of Education and Training (2004) also recommends that the process of identification of gifted and talented students must be dynamic and continuous. It must, at any stage of the student's development, identify and allow for the highly talented to emerge from the larger talented group, and ensure that the identification of students from disadvantaged and culturally diverse groups is not overlooked. No single method of identification is appropriate for all types of gifted students. Therefore, a wide net should be cast by the use of multiple criteria, and as much information should be gathered as resources will allow. This will identify a wide range of students (NSW Department of Education and Training, 2004).

The above literature shows that the use of IQ tests by themselves, or any other single assessment criterion for identifying gifted and talented students is weakened by the multifaceted nature of giftedness itself. The suggestions of the existence of multiple abilities (as claimed by Marland, 1971) and multiple intelligences (as claimed by Gardner, 1983) add to this concept of the 'multifaceted nature' of giftedness. Certainly, in the literature there are strong and persuasive arguments for the selection of a comprehensive and pluralistic conception of giftedness, which includes diverse potential among all demographic and ethnic groups. Accordingly, the use of multiple selection criteria in identification of this multifaceted characteristic should be recognized and acknowledged. Consequently, the following literature review explores suitable methods and strategies that can be used to identify the multiple gifts and talents of primary Grade children.

4.3.2 Common Methods in Identification of Gifted and Talented Students

The major task in an identification process is to identify the specific talents, aptitudes, or abilities of students. Feldhusen and Jarwan (1993) described a number of diagnostic instruments such as cognitive tests of intelligence, aptitude test and school achievement tests. In addition, Renzulli et al. (2002) have constructed several diagnostic rating scales for 'Rating the Behavioral Characteristics of Superior students' and Gagné (1999) has published nomination criteria to identify multiple talents through ratings by peers, teachers, and self-assessments (Peer, Teacher and Self Nomination Forms - PTSNFs).

Trost (2000) also specified that excellent performance in particular subjects is reflected in top Grades, teacher ratings, or achievement test scores, and the predictors that have gained the most attention in this context are measures of intelligence, scholastic aptitude, creativity, interests, and other personality traits as well as parent and teacher ratings.

4.3.2.1 Tests

Despite criticisms of bias and limitations, standardised tests remain the most useful, strongest and accurate measures of intellectual and academic ability. A number of intelligence, aptitude, and achievement tests are commonly used in identifying gifted and talented children (Feldhusen & Jarwan, 1993).

4.3.2.2 IQ tests

Out of the most common tests, intelligence tests can be classified into four categories. For example, the bottom line instrument for confirming suspected high intelligence is the individual intelligence test, such as the Wechsler Intelligence Scales for Children, (e.g. WISC IV (Prifitera, Saklorske, & Weiss, 2005) and Stanford-Binet Intelligence Scale (S-B 1V edition, 2006). On the other hand, group intelligence tests can be administered to a group of people at the same time and are cost effective, though less reliable and less valid compared to individual tests. Group tests are mainly verbal and highly correlated with actual school achievement, therefore are biased against children who are non-verbally gifted (Davis & Rimm, 2004). Nonverbal intelligence tests are more appropriate for individuals with limited verbal/language skills (Feldhusen & Jarwan 1993).

The Raven's Standard Progressive Matrices (RSPM) (Raven & Raven, 2000) is a series of nonverbal, group/individual intelligence tests covering an age range from five years to adult. These tests are normed for untimed administration, and minimum instructions are needed. Therefore, they are especially valuable for evaluating minority and culturally different students who are limited in language skills (Feldhusen & Jarwan, 1993).

Mills and Tissot (1993) in their research study, 'Identifying Academic Potential in Students from Under-represented Populations' showed a higher proportion of minority students (in ninth Grade) scored at a high level on the Raven's Advanced Progressive Matrices (APM) than on the traditional method (Academic Aptitude Test -The School

and College Ability test). Therefore, APM does appear to be a preferred instrument for finding academic potential in students from minority cultural groups or backgrounds of disadvantage. However, they highlighted issues and concerns surrounding its use as a sole instrument for selecting students for special programs of high-level academic standards. In such cases, it should be used in conjunction with other measures (Mills and Tissot, 1993).

4.3.2.3 Achievement tests

Standardized achievement tests usually measure a specific learning ability or the performance level of a student in a particular subject area. These tests compare students with other students who are in the same stage or Grade. When choosing a standardized achievement test, it is important to understand the specific purpose of the test. Examples of standardised achievement tests are the Iowa Test of Basic Skills, the Metropolitan Achievement Test, the Peabody Individual Achievement Test (Feldhusen & Jarwan, 1993), and the Cognitive Ability Tests (CAT). Since these tests only measure performance or achievement levels, they do not identify a student's potential to achieve in a particular area. Thus, some gifted underachievers may score poorly (Merrick & Targett, 2004).

Teacher-made tests are also effective identification tools for identifying high-performing students. Educators regularly use such assessments to determine students' current level of achievement. However, these tools often have a low ceiling and are unlikely to show the true ability of some highly gifted students, if the test is designed only to show mastery of basic skills. However, any teacher-made assessment, which has benchmarks, can be considered a teacher-made assessment for identification (Merrick & Targett, 2004).

The NSW Department of Education and Training (NSW-DET, 2004) recommended that achievement tests be used to assess student performance in syllabus outcomes and that ability tests be used for assessing potential, because underachieving students with high intellectual potential may score poorly on achievement tests (NSW-DET, 2004).

Merrick and Targett (2004) also note that standardized tests and achievement tests may not identify gifted underachievers.

Differential Aptitude Test (DAT) (Personality and Aptitude Career Tests, 2006 on line) and the Scholastic Aptitude Test (SAT) (Ohio Department on Education, 2007 online)

are examples of aptitude tests used to identify specific abilities that develop over long periods and the potential for future achievement in specific areas or careers. The Differential Aptitude Test is used to measure verbal reasoning, numerical ability, abstract reasoning, perceptual speed and accuracy, mechanical reasoning, spelling and language usage of junior and senior high school students and students in the upper elementary Grades. The validity and reliability of this test is high and it is viewed as an excellent measure of special abilities. The Talent Search Programs in United States use SAT as an above-level test for identifying precocious youth in mathematics and science at the 7th and 8th Grade levels. It is also used as a criterion for admission in most state-supported residential schools of science and mathematics (Feldhusen & Jarwan, 1993).

4.3.2.4 Nominations and rating scales

Gifted and talented children need a great deal of help and emotional support from parents, extensive educational input and resources from school, a supportive peer environment, and mentors who can demonstrate and model advanced levels of expertise and creativity in their areas of talent potential (Feldhusen, 2001). Thus, there is no doubt that teachers, parents and peers can play a significant role in the identification and in assisting this special student group. Checklists, rating scales and other informal data from parents, teachers, and peers are especially important to ensure identification of students from disadvantaged populations (even though these measures are very subjective).

Braggett (1997) and Richert (2003) noted that there are many gifted and talented children whose abilities are quite naturally fostered by their parents and friends, who benefit from the help of caring teachers, and who pass through childhood and adolescence with minimum of difficulty and stress. This again highlighted the importance of parent, teacher and peer group involvement in the process of identifying the gifted and talented individuals. Thus, it could be viewed that nominations and rating scales have a considerable role in identification.

4.3.2.5 Teacher nominations

Nevertheless, both Perleth and Heller (1994) and Trost (2000) highlighted that in primary school, achievement tests are superior to teacher judgments. Davis and Rimm (2004) indicated the biases in teacher ratings and teacher nominations in the following manner:

There is an undesirable tendency for teachers to favour students who are cooperative, smiling, and anxious to please; who do their work well, neatly, and on time; and who absolutely never talk back. While 'teacher pleasers' are a pleasure to work with, they may or may not be the most gifted and talented students in the class. However, they have a high likelihood of participation in special programs. Even if teachers rate students on specific qualities such as academic talent, leadership, motivation, or even creativity, teacher pleasers still are likely to be selected. The extremely bright or the creative, curious, and questioning students, who may be stubborn, rule-breaking, egotistical, or otherwise high in nuisance value, may not be the teachers' favourites, but they sometimes are the most gifted (Rimm & Davis 2004: 85).

They further added that bright underachievers would be overlooked, along with bright disruptive students and unconventional creative students (Rimm & Davis, 2004, pp. 93). Chapter 3 of the Australian Senate Committee report, 'Better schooling for gifted children' (Commonwealth of Australia, 2001 online), has made suggestions to overcome this issue. It revealed that the Gifted Education Research Resource and Information Centre (GERRIC) stresses in-service or training in gifted education could significantly increase teachers' effectiveness. If they have received no proper training, teachers may misread inappropriate behaviour; the teachers untrained in this area are not able to distinguish between potential and performance, and tend to miss underachievers, divergent thinkers, visual-spatial learners, and children who mask their ability. Therefore, it was highlighted in this report that teacher training and professional development relating to gifted education should be taken in four layers of professional development, each of increasing depth: from 'general awareness raising for all teachers' to 'expert teacher mentor and teacher trainer'. It was suggested that understanding how to identify gifted children should go to the first layer, which should be done by all teachers (Commonwealth of Australia, 2001). Further, Davis and Rimm (2004) too suggested, some reliability and validity difficulties could be overcome by better acquainting teachers with characteristics of gifted students and by training them to rate and identify gifted and talented students.

In addition, learner-centered instructional strategies, where the teacher acts as a facilitator of learning, are most effective in building personal and social talent in gifted and talented children (Manning & Besnoy, 2008). Such situations may help giftedness to emerge, so that teachers would be able to identify more students who are gifted, and might be able to minimize underachievement in gifted students.

In Lewis Terman's (1925) monumental study of gifted children, it was recognised that teachers are exceedingly unreliable sources of information for identifying gifted

students. In this study, when the teacher nominations were compared with the IQ test scores, it was found that the tests were better predictors of high achievement (Borland 1989). However, Chaffey et al. (2003) suggested that when an IQ score is used as a cut-off point to determine gifted status, the relevance of the findings of such tests may be limited for populations such as the culturally different who perform below their potential on IQ tests.

Borland (1989) found that teachers are good at recognising signs of giftedness, suggesting that the difference between these studies and earlier ones was due to the nature of the instruments used. In the cases where teachers fared well, behavioural checklists, rather than simple nominations, were used. He further indicated that the information provided by teachers should not be ignored since each year they spend more than 180 days with the children, and are sensitive to and capable of observing and identifying gifted children.

In this event, it is crucial that teacher referral forms or questionnaires pose the right questions so that the proper information can be gathered (Borland (1989). For this purpose there are several teacher rating scales such Rogers inventory (Rogers, 2001) and scales such as Scales for Rating Behavioral Characteristics of Superior Students (SRBCSS) developed by Renzulli et al. (2002) and also PTNSFs developed by Gagné (1999). Borland (1989) suggests that it is very unlikely the available scales fit the needs of every program; thus, it is recommended to modify to be more appropriate for the specific setting. He further indicated school personnel should feel free to examine more than one available rating scale and then to develop their own instruments that are more attuned to the needs of the local target group, and thus enhance their validity.

4.3.2.6 Parent nominations

Epstein (1996) indicated that there are significant benefits when the parents are involved in their children's schooling. Feldhusen and Jin (2000), in their study *Parent identification of the talents of gifted students* found that the parents are able to discern special talents in their children and to seek talent development services. Those parents were able to identify that their children possess more than one talent: such as the talents in the domains of art, academic and interpersonal activities. Such identification is done through parents nominations or rating scales.

Further, during the study carried out to identify talents of primary children in Sri Lanka, by the National Institute of Education in Sri Lanka (2003), the parents were able to comment on artistic abilities, children's willingness to engage in studies for long period (task commitment). Though not many parents commented on other special talents that their children might possess, some parents were able to identify more than one talent possessed by their children. However, it was reported that few parents were able to comment on the talents that their children possessed in the areas such as mechanical, electronic, sculpture, singing and dancing (NIE, 2003; This study is discussed in more detail in chapter 1).

Mönks et al. (2000) found that the best information on gifted preschool children is available from their parents. Robinson (1993) found that parents tend to be best at identifying precocious children especially in the areas of language and reading. For example, parents are quite good at identifying toddlers with broad vocabularies and complex sentence structure, and better at identifying preschoolers who think well mathematically and read early. At primary K-3 level, parents are good sources of information about a child's strengths and intrinsic motivation, sometimes demonstrated by extracurricular activities (Richert, 2003). 'Parents are very aware of the behaviours of their children. When asked relevant questions, they can provide information that is clearly indicative of potential giftedness' (Clark, 2008, p. 205).

However, according to the results revealed by Johnson and Lewman (1990), parental perception of giftedness indicators in three-to-four year old boys and girls has to be doubted, as the answers of the parents showed drastic role stereotype. Trost (2000) also summarized that other studies (e.g. the study by Ferdinand, n.d.) raised doubts about the predictive value of parent judgments. In general, parents tend to over estimate their children's giftedness, while highly educated parents tend toward under-estimation. Merrick and Targett (2004, p. 8) indicated the significance of parent nomination as follows:

Parents are valuable source of information. No one knows a child, particularly a young child, better than their parent. Parents have information on both the positive and negative characteristics of their children, particularly in the first five years of life before schooling begins. They know their children's areas of interest and passion. Significant areas of advanced development can be readily observed in young children and it is the parent who is the 'keeper' of this information.

Parents may be aware of the ages at which their child moved through stages of speech acquisition, physical development milestones, stages of pre-reading and early reading, and the development of innumeracy and early interests. Early development of speech, movement and reading are strong predictors of high intellectual ability.

The findings of Gross's (2004) study of exceptionally gifted children showed that children who sat up at four months, uttered their first meaningful word by eight months and walked up stairs by nine months, demonstrated learning which was significantly in advance of their peers. Actually, these behaviours occurred long before school entry and were observed by parents and not by teachers. This study informs us of the essential involvement of parents in the identification process for teachers to gain the whole picture of the child. A variety of parent checklists is available and one can use a preferred version that suitable to state or territory (Merrick and Targett, 2004). Smutney (1995) claimed that, in her experience, the most accurate identifiers of gifted children, from infancy through age eight, are indeed parents. The keenness and reliability of parents' observations come from the consistency and continuity of involvement with their child. The parents of young gifted children should construct a portfolio of their child's work, activities and interests, which gives a record of its intellectual development. Further, such a portfolio may include library book awards, preschool projects of merit, projects from home that are unusual, special awards from scouting or community services and video or audio-tapes of performances or projects (although photographs are better as they can be viewed at the time the portfolio is reviewed). The parents can produce these portfolios to the teacher before or soon as possible after the school year begins. This would help the teacher to understand that the child is exceptional (Smutney, 1995, p. 15).

4.3.2.7 Peer nomination

Students themselves can be very important in screening information about each other. In this task, instead of the teacher asking directly about the giftedness of their friends, a series of indirect questions can be employed to gather such information (Borland, 1989, pp. 103-106). Davis and Rimm (2004, pp. 94-95) also proposed that peers are very good at naming their gifted and talented classmates. Since they know each other very well, peer nomination is specially supportive in identifying gifted children out of minority students, rural students and as well as culturally different, disadvantaged or disable children.

Further, the peer nominations are useful especially in finding students with leadership potential. It is from peers that leaders emerge and peers first recognise these leaders. Peer nominations also are useful in the area of creativity, because peers have a good basis for judging the imaginative and uniqueness of a fellow student's ideas (Richert, 2003, p. 152). However, Rimm (2004, p. 94) reiterated her earlier (1991b) conclusion that peer nomination would not be suitable for young children in kindergarten to third Grade as they may have difficulty in understanding the concepts used in nomination criteria. Gagné (1989) criticized the peer nomination criteria presently used. Gagné (1989) argued that in several studies the content and format of the peer nomination forms very much differ from one another. Most of them are 'monothematic'; very few have 'plurithematic' forms. Moreover, he commented on the internal consistency of these monothematic and plurithematic forms, and thus that the validity and reliability of measures are open to question.

In spite of these weaknesses, Gagné (1999) acknowledged peer nomination due the fact that the possible scores obtained might be much more stable since a large number of judges was involved in this process, perhaps at times more than 20. In spite of the lesser maturity of some of the judges, Gagné (1999) contrasted this favourably to the scores obtained from individual teachers. In fact, Gagné (1989) reported that about 25% of school identification programs in the USA used peer nomination as a technique among their screening instruments. This attests to the growing popularity of the technique. Further, Gagné (1999) claims Cardinal examined the relationships between peer and teacher scores from various viewpoints in his study. Cardinal used the PTNSFs and observed the average peer-teacher correlation was a moderate .52. It was seen that item content strongly influenced the peer-teacher correlations. For the items that had a strong Inter-Peer Relation coefficient (IPA), there was a strong agreement between students and teachers. He further indicated teachers are not always very good of assessing abilities that are rarely exhibited in the school environment.

4.3.2.8 Self nomination

Davis and Rimm (2004) claimed that enlightened self-motivated students who have strong artistic, creative, scientific or other interests and talents have a need of participation in special programs. However, when the teachers do not identify such talents, the students miss the opportunity of being nominated for such programs. Thus,

it could be said, in such instances, if self-nomination were allowed, students could nominate themselves to special programs. They also suggested that self-nomination is an ideal criterion for identifying students at junior and senior high School Levels, since peer pressures may cause youths to mask their special talents. Further, Davis and Rimm (1994, 2004) claimed that Renzulli too indicated that self-nomination should be used only in the identification of gifted and talented students at the high School Level. In contrast to the above, Ford (1996) stated for any students (for example, gifted underachievers and black students who wished to hide their abilities) self-nominations are impractical, since these students are not likely to nominate themselves. The following information of Richert's (2003) indicates similar implication on self-nomination, but suggests a practical way to get successful information from this particular student group.

Starting about Grade four self-nominations can be very successful identification instruments. Their disadvantage is that students who have high potential but poor self-esteem, or who are underachieving, may not nominate themselves if they have traditional view of giftedness. Therefore instead of identifying themselves as 'gifted,' students are asked to express their level of interest in various program options that allow for intrinsic motivation, creativity, and risk taking (Richert, 2003, p. 152).

Feldhusen and Jarwan (1993, p. 244) indicated in their multi-identification system that teachers, parents, peers and other persons were to provide valuable information. Well-structured rating scales and checklists could be implemented as useful instruments for identification process.

4.4 Identifying Gifted and Talented Students from Special Populations

In the above literature, it was repeatedly indicated that gifted and talented children from various disadvantaged groups (such as students from low socio-economic background, minority cultures, ethnical minorities, or other special students who do not show their giftedness in classroom situations) who are commonly called 'gifted underachievers' could not properly be identified by the normal identification processes discussed above. Therefore, in this section, the literature on the nature of underachievement, on causes for underachievement, and on different types of underachievers, and on strategies that can be used to identify them will be reviewed and analysed.

4.4.1 Nature of Underachievement: Definitions and Prevalence of Underachievement

In reality, these children belong to the group of 'invisible gifted children'. 'Invisible gifted children' can be found in any classroom. They are the children whose potential goes unrecognised by the teacher, and often by the parents. Sometimes the parents might recognise their ability but have not felt empowered to support the development of this potential. These children are called underserved or underrepresented invisible gifted children, rather than gifted underachievers. Here 'underachievement' may in fact be the wrong term, as it places the onus on the student when the cause or responsibility lies with the education system (Funk-Werbo, 2003).

Although there is no precise definition for 'underachievement', it has generally been seen as a discrepancy between expected and actual performance. Otherwise, underachievement is the discrepancy between ability and actual achievement (Peters, Grager-Loidl & Supplee, 2000, p. 609). Although many studies use more technical definitions, the discrepancy between potential and actual productivity seems to be part of all definitions (Richert, 1991).

Richert (1991) claimed that there is a reason to assume that 'at least 50% of students identified through IQ have been designated as academic underachievers'. She further stated that there could be underachieving individuals who may have been identified as gifted on a basis other than an IQ-test. Supplee (1990) adds additional evidence by highlighting that the Education Consolidation and Improvement Act (PL 97-35) by its definition suggests that children could become underachievers as some children will not develop their potential if special support is not given. Deldeniya (2002) reported that the underachievement of clever children during the last stages of primary education in most children of Sri Lanka is due to the pressure put on them by parents and teachers in the process of preparing them for the Grade five scholarship examination (this is discussed in more detail in Chapter 2).

Moreover, the achievement-oriented and socio-cultural/psychosocial oriented models of giftedness (Mönks & Mason, 1993, pp. 89-101) include other variables in addition to general intelligence that must be present to allow gifted potential to develop and lead to high-level achievement. For example, Renzulli (2003, pp. 75-87), in his Three-Ring conception model proposed that other than above average ability, task commitment and

creativity should be possess giftedness to emerge and also in the same way. Tannenbaum (2003, pp. 45-59) discussed five factors that should be present for giftedness to emerge. By default, these models of giftedness unconditionally identified that ability does not automatically mean achievement of the same level, but intervening factors may lead to lower achievement (Peters et al. 2000). Thus underachievement occurs. However, Renzulli's definition does not consider the existence of underachievers and identification using his model would not result in the inclusion of underachievers in resulting programmes.

Among the prevailing definitions, Gagné's model of giftedness clearly conceptualized underachievement. Since it differentiated the terms 'gifted' and 'talented' it tried to understand the concept 'underachievement'. Gagné's model also provided a well-expressed mechanism to explain how underachievement arises: if the catalysts necessary to convert potential to performance are absent, negative or weak it is highly likely that gifts will not fully develop into equivalent levels of performance that is talents (Chaffey, 2004, pp. 5-6). That is, 'underachievement' is something gifted children learn, whether because of family, peer, or school factors. 'The child's self-concept figures heavily in whatever is going with underachievement, regardless of which factors are involved in its causes' (Hansford, 2003, p. 305).

4.4.2 Reasons for Underachievement

Baker, Bridger and Evans (1998) proposed family, school and individual as the factors come together to contribute to sudden drops in achievement or in a slow decline in an achievement scores. Mönks and Mason (1993) further included peers as another factor that influence underachievement. The determinants of whether gifted children move towards high achievement or fall into under-achieving patterns appear to be related to their home, school, and/or peer environments (Rimm, 1995). The factors that evoke underachievement behaviour may be categorised as family, school, personality, and peers (Peters et al. 2000, p. 613).

4.4.2.1 Family factors

Relationships between children and parents are of the utmost importance (Butler-Por, 1995, pp. 253). For example, Butler-Por (1993, pp. 653) described the situation of rejected children (that is, children who are born to parents but are unwanted due to various psychological and socio-economical factors) in this manner:

Rejected children who are not receiving appropriate nurturing, reinforcement, and support, are unable to understand what is happening to them, and what is expected of them. They are unable to acquire skills, gain confidence and build a realistic self-concept. They may adopt withdrawal or aggressive behaviour, hostility, express high need of affiliation, and seek constant attention at home and school.

This situation hides a child's real potential and shows characteristics of underachievement. Butler-Por (1993) further claims that parental divorce may also become a risk factor for underachievement in some gifted children, but not in all. Moreover, Davis and Rimm (2004, p. 321) highlighted the significance of identification with good parent models as an important family factor in high achievement, and the lack of such identification, and poor parent modelling, are related to underachievement. Further, in summarising some of the available literature, Rimm (2004) proposed if one parent is definitely more powerful from the child's perspective, but does not value education or school achievement; the identifying child is not likely to perform well in school. Besides that, she further indicated that the research shows worse achievement for males in father-absent homes, and worse Mathematics and problem-solving skills for both males and females in father-absent homes, and successful career mothers serve as effective models for achieving girls. Additionally, Winner (1996) proposed that the best that parents can do is to demonstrate the behaviour, that is, the style of working that is necessary for success in the academic domain.

Parents' low expectations may influence the underachievement. In such instances, the student's self-perceptions may tend to match that of her /his parents. When parents' expectations are too high and if the child feels that he or she will not be able to satisfy the parents' expectations, the child may feel that it is useless to cope with demanding learning experiences. As a result, a fear of failure is internalised, resulting in behaviour manifestations, which hide high potential (Butler-Por, 1993, p. 658). It is not only the parents', but also siblings' issues that might cause underachievement, particularly, when there are competitions between siblings and the younger children try to achieve the level of their older siblings (Hébert, 2001, & Rimm, 2008).

Similarly, Deldeniya (2002) discusses how parents' expectations, focused on scholarship examination, may lead to underachievement by clever children during the last stages of primary education, in Sri Lanka (this is discussed in more detail in Chapter 2). Families with gifted children are vulnerable to 'parentification', which is another negative family dynamic. In this situation, gifted children who are 'parentified'

are given too much family responsibility too early because they seem so much like an adult in their language and behaviour (Moon, 2008, p. 88).

4.4.2.2 School factors

When considering school factors on underachievement, it is to be mentioned that school is the place where most underachievement behaviour becomes visible. However, the research literature (e.g. Baker, Bridger & Evans, 1998) indicates that family, school and individual factors each contribute to the problem of underachievement, and since the etiological factors of underachievement can also be found outside the classroom, school is not the only place where underachievement needs to be addressed. Butler-Por (1995, p. 253; Peters et al. 2000) explained how latent underachievement patterns may become visible in some individuals when they enter school. For example, some children may show creative thinking, but when they notice that their parents are not supportive of it, they adjust their behaviour, which leads to the loss of creative potential.

Classroom work with little flexibility and with no respect to their individuality is found unchallenging and boring to those intellectually gifted and creative learners (Whitmore, 1980). Such situations not only hinder the teacher in observing capacities in students; they also induce underachievement (Freeman, 1993). Further, Deldeniya (2000, pp. 32-38) reported the boredom experienced by the Grade Five primary students in Sri Lanka due to the monotonous work teachers and parents force them to do in preparing for the scholarship examination (this is discussed in more detail in Chapter 2).

Gifted children are not able to demonstrate their advanced abilities while dragging through regular classroom activities, and if unchallenged they may lose interest and either act out or stop paying attention. This occurs when teachers do not recognize and address the high ability and learning needs of the child. Rather, they force the child to comply with Grade level expectations through inappropriate teaching instructions and learning opportunities, which are rigid and teacher centred rather than student centred. However, experienced teachers know that an excellent way to manage children's behaviour in the classroom is with clear instruction, and assignments that grab and maintain the students interest (Ruf, 2005).

Gross (2003) pointed out that teachers' lack of awareness of giftedness and underachievement may induce underachievement in students. She further proposes teacher's low expectations can encourage the underachievement of students in three ways.

They are the mechanisms of self-fulfilling prophecy, which will make students behave according to the expectations of the teacher; perceptual bias, which will give the teacher wrong ideas about the abilities of students; and incompatibility of teaching and learning styles. Moreover, Rimm and Davis (2004), identifies serious problems in gifted underachievers when the classroom situations are heavily stressed with competition and comparative evaluation, since it provides convincing evidence of his or her incompetence. In such situations when underachievers, who do not have a clear sense of their own competence, are affected severely, they search for other classroom rewards or other evidence of personal worth, or adopt defensive measures. Additionally, grading practices such as teachers giving lower Grades as punishment for rule-breaking classroom behaviours, may also cause underachievement, because students may feel rejected by their teachers (Kolb & Jussim, 1994).

In addition, ritual punishments tend to discourage the gifted child from achieving in rigid, inflexible classrooms, for example, when a child asks too many questions or responds too frequently, some teachers not only ignore them but also may scold them for prompting the answers (Reis, 1998). Additionally, Deldeniya (2000, p. 34) explained that in primary school Grade Five classes, Sri Lanka, there are incidents where students are ridiculed by the teacher for asking questions and are given nicknames to stop them asking questions. Because of this situation, some of gifted children end their primary education as underachievers.

However, Renzulli (1992) pointed out teacher characteristics, such as ‘romance with the profession’, may reverse underachievement. Heller (1991) suggests that organization of teaching and teacher personality is the two main factors that influence the achievement of children in the classroom, and Butler-Por (1993) added that a student’s attitude towards school also effects their achievement. Teachers’ negative expectations may encourage underachievement in some students whose self-concept is already is poor: poor self-evaluation may be seen to be confirmed by a teacher’s expectation of failure, which, in turn, is reflected in poor achievement (Kolb & Jussim, 1994). That is, the teacher makes the difference, which is precisely what Hattie (2007) emphasizes in his model of teaching based on meta-analysis of over 700 studies.

4.4.2.3 Personality factors

Personality factors also have effects on underachievement. According to Vlahovic-Stetic, Vidovic and Arambasic (1999), individuals with more positive self-concept are more motivated and believe that they are responsible for their success. But underachievers possess less motivation than their more successful peers (Baum, Renzulli & Hébert, 1995). The self-concept of gifted children will deteriorate when they experience extreme boredom, for example, when they cannot develop and train their thinking skills, and when they do not develop satisfying social relations (Gallagher, 1991; Heller, 1991; Van Boxtel & Mönks 1992; Lee-Corbin & Denicolo, 1998). According to Rimm (2003), children with low self-esteem, although they acknowledge their intelligence, do not believe that they are capable of reaching what their families or teachers expected from them, or what they expect of themselves. Davis and Rimm (2004) further revealed that these children mask their low self-esteem by displaying highly protective defence mechanisms such as, openly criticizing the quality of the school or talents of individual teachers or claiming that they ‘don’t care’ or ‘didn’t really try’ when they obtain average test score or class Grade. Additionally, Rimm (2003) indicated expectations of low Grades and perfectionism (dysfunctional perfectionism), though apparent opposites, also serve as defence mechanisms for the underachieving child. Underachievers expect low Grades; so that they lower their risk of ‘failure’, (low goals are consistent with poor self-image and low self-confidence). Thus, setting goals that are impossible to reach also provides a defence mechanism for underachievers (Rimm, 2003). The reason for this is that underachievers have a feeling of lack of personal control over their success. They do not really believe they can reach their goals, even if they work hard (Rimm, 2006) Peters et al (2000) indicated that underachievers lack meta-cognitive and strategic skills. For example, they are less capable of transferring skills from one situation to another. Chaffey (2004) further explains that disengagement plays a crucial role resulting in underachievement, and perpetuating it. A child’s meta-cognitive skills may be poorly developed because they have disengaged from classroom learning for long periods, their cognitive efficiency is impaired, and they perform below their actual level of ability. They end up as a ‘gifted underachiever’, and are unable, because of cognitive inefficiency, to get out of the cycle of underachievement.

Another personality factor that affects achievement is the mismatch in the learning style and teaching strategies. Chaffey (2004) revealed that in classrooms where the auditory-sequential learning style is largely used, gifted visual-spatial learners may easily become frustrated and disengaged, resulting in low academic self-efficiency, underachievement and oppositional behaviours.

There are also physical factors that may cause underachievement. Specific learning disabilities, physical impairments, autism, Asperger's Syndrome, Attention Deficit Disorder, Attention Deficit Hyperactivity Disorder, or anything else which impairs performance and masks high potential, may cause extreme difficulty in developing giftedness into talent (Davis & Rimm 2004). These students are called 'double-labelled' or 'twice exceptional' students, or having dual exceptionality.

4.4.2.4 Peer influence

Peer influence also became a problem when gifted children try to adapt to the behaviour of the peer group, and when these behaviours are not matched with the interests and needs of the gifted child himself. For example, gifted children were found neglecting homework, as a condition of their being accepted in the peer group (Baum, Renzulli & Hébert, 1995). Gross (1989) explains that this forced-choice dilemma, in which a student feels he or she has to choose between group acceptance and achievement, can be a major contributing factor to the academic underachievement of many gifted students, especially in the students from social and cultural groups that have experienced poor educational outcomes. Bullying also could cause social and emotional difficulties in some gifted students. A national level study on the incidence of bullying among gifted students in Grades K to 8 showed a sizable minority of gifted students across several geographic locations, types of communities and racial and ethnic groups experience a threat to social and emotional well-being in the form of peer bullying. This bullying is often related to their giftedness (Peterson & Ray, 2006).

Winner (1996) recognized the same situation. She explained this as problem especially present among gifted girls. Clasen and Clasen (1995) recognised that for 66% of the students who participated in a Javits program for minority-gifted students, peer pressure was the primary force for their failure in schoolwork.

4.4.3 Characteristics and Categories of underachievers

In this section, different categories of gifted underachievers and their characteristics would be discussed. Characteristics of gifted underachievers have been identified in several studies. Whitmore (1980) has summarized the most important traits in an identification checklist. She suggests if 10 or more characteristics are identified, such a child should be further evaluated to determine whether the child is a gifted underachiever.

Betts and Neihart (1988) explain that, apart from the very few autonomous learners, most gifted children are underachievers or are at-risk of underachieving. One such example is that of ‘challenging gifted students’, who possess a higher degree of creativity, who often question authority, and who may challenge their teachers. When the school system does not affirm their talents and abilities, they are frustrated and struggled with their self-esteem. Sometimes they may be disruptive in the classroom. In spite of their creativity, these challenging students develop negative self-concept. They may be ‘at risk’ and, eventually, drop out of school.

Similarly, ‘underground gifted students’ (Betts and Neihart, 1988) are the students who are confronted by the forced-choice dilemma, that is, the choice between excelling academically and being accepted by the peer group (Gross, 1989). They may then fear that they will lose this acceptance if they drop their camouflage. They suffer from a strong need to belong, and often are insecure and anxious and feel guilty for denying their gifts.

‘Dropout gifted students’ (Betts and Neihart, 1988) do not physically drop out from the school, but intellectually and emotionally is quite divorced from what is going in the classroom. Since the school system has not met their needs, they are angry and feel rejected. Their interests may lie outside curriculum and are not valued by teachers or classmates. They show extremely low self-esteem and low performance. They refuse to participate and respond defensively.

The ‘twice-exceptional’ or ‘double-labeled’ (Betts and Neihart, 1988) gifted children have physical or emotional disability or learning disability. For example, they may have hearing impairment or visual impairment or Asperger’s Syndrome together with the giftedness. The School May focus only on the disability and ignore the gift. Therefore, they are confused about their ability to perform and frustrated when teachers ignore

their gifts and focus only on their disabilities. They may display disruptive behaviours through frustration.

In addition to the above categories of underachievers, there is another group of underachievers, whose gifts and subsequent underachievement go unrecognised. They are called 'hidden underachievers' or 'invisible underachievers' who underachieve because the educational system does not recognize their potential (Ford, 1996). Chaffey (2003) defined the term 'invisible underachievers' as individuals whose assessed potential is less than their actual potential and who underperform in the classroom. Chaffey (2002, pp. 1–2) also explained the prevalence of hidden or invisible underachievers as follows:

The underachieving gifted child presents educators worldwide with a special set of challenges. Recognized giftedness but poor school performance represents a heartbreaking waste of potential, both for the child and for society generally. These children are usually identified by displaying a discrepancy between assessed aptitude and classroom performance. However, what if the gifted child also under-performs on the most commonly used tools for identifying the gifted? It is then likely that these children will remain unidentified as gifted. Worse, they will remain unidentified as being underachievers. These children often provide glimpses of their academic potential, giving rise to 'gut feelings' in teachers that these children have more to give. These children are our 'invisible' gifted underachievers. 'Invisible' gifted underachievers are present in all parts of society but research has shown that they are more likely to be found in culturally different and low socio-economic society groups.

The nature of invisible underachievers suggests that IQ tests, achievement tests, or any other multiple criteria alone would not help to identify them. Grigorenko and Sternberg (1998) proposed that dynamic testing may, at least to some extent, solve the problem of identifying them, and a successful example of this process is seen in Chaffey's (2002; 2003) Coolabah Dynamic Assessment model.

4.4.4 Special Groups Vulnerable to Underachieving

4.4.4.1 Culturally diverse underachievers

As revealed by the literature reviewed so far (Peters et al. 2000; Chaffey, 2003; Richert, 2003; Davis & Rimm, 2004) cultural minority groups are under-represented in programs for gifted students (Butler-Por, 1993; Ford & Webb, 1994; Butler-Por, 1995; Ford & Thomas, 1997). Ford (1996) reported that these students continue to face unintentional bias at school and in society. According to Hébert (1998), one of the reasons for underachievement of minority students is that curriculum activities do not

match with their cultural competencies. The definitions of achievement in a particular subculture may be very different from that of the dominant culture (Reis & McCoach, 2000). Since different cultures hold different beliefs in preschool education, therefore, the lack of early appropriate academic experiences is also another important factor that contributes to the underachievement of these sub-cultures (Diaz, 1998).

According to Ford (2003), culture profoundly affects one's behaviour. If teachers do not understand that students come from cultures that value the oral tradition, they may neither recognise nor appreciate the strengths of students who prefer speaking to writing and reading. These teachers may not recognise the students who speak nonstandard English can still have strong verbal skills. In such situations, teachers may not refer those students for gifted programs if they equate giftedness with verbal, reading, and writing proficiency (Ford, 2003).

4.4.4.2 Underachievers from low socio-economic backgrounds

The National Educational Longitudinal Study of eighth Grade programs for gifted students by the U. S. Department of Education (1993) indicated that students, who belong to families of high socio-economic status, are about five times more likely to be in programs for gifted students than are students from families of low socio-economical backgrounds (Borland & Wright, 1994).

Borland and Wright (2000) outlined the key indicators correlated with poor school performance of educationally disadvantaged children. Some of these are coming from a cultural minority group; living in poverty; living in single-parent family; having a poorly educated mother; having limited proficiency in the language of instruction. In particular, studies by Dias (1996) and Alwis and Rupasinghe (cited in Perera et al. 2004) indicated that student performance is consistently below average in schools patronized by the poor and underprivileged segments of society in Sri Lanka (this is discussed in more detail in Chapter 2).

4.4.4.3 Gender issues on gifted underachievement

Apart from the above two special groups that remain vulnerable to underachievement, another group that also is vulnerable is gifted girls. Hence, when reviewing literature on gifted underachievement, gender issues could not be overlooked by the researcher. The literature on gender issues and underachievement is also considered briefly in this section.

From the first years of school, girls learn to conceal their talents by imitating the behaviour of the children with whom they are placed in order to receive more social acceptance. In their attempt to fit into a particular peer group, gifted females often mask their giftedness (Klein & Zehms, 1996; Reis, 2002a). It is found that girls in the early years of school hold more negative beliefs than boys do about their abilities in Mathematics, but despite this, they consistently earn the highest Grades in the class (Jacobs & Weiz, 1994).

Reis (2002b) found that, because of limiting stereotypes and barriers to achievement presented by parents, school and society as a whole, gifted females experience both endogenous and exogenous barriers to achieve. She further highlighted that many of the standardized instruments used to identify giftedness have sex biases against girls (Reis, 2006, pp. 87-111). Moon (2008) noted that teachers also reinforce gender-stereotypical attributions for success and failure, believing that the success of a male student is due to ability while the success of a female student is due to effort. This kind of attribution pattern may lead to low self-efficacy of gifted females.

According to Kerr (2000), primary age gifted girls are superior to gifted boys, and also to average girls and boys, in psychological adjustment. However, this pattern tends to change when they reach fourth and fifth Grades, since gifted boys begin to receive higher achievement scores in mathematics and science than girls, and this gap will continue throughout their lives. Kerr and Nicpon (2003) found that even though gifted girls in late primary stages may be behind in mathematical performance there are no differences in self-efficacy between the sexes at that stage. Here it is worth noting that, at a national level, Grade four girls in Sri Lanka lead in achievement compared to their male peers (Perera et al. 2004; this is discussed in more detail in Chapter 2 under section 2.2.7- Gender equality in education).

Kerr and Cohn (2001) reported that attitudes towards gender also can have an effect on gifted males. That is, gifted boys are often held to rigid stereotypes of masculinity. In an American national study of achievement test scores, Colangelo et al. (1993) found that there were more male gifted underachievers than female, at a ratio of about nine to one. When talented boys are held back and denied gifted education, they may become bored and difficult children. A study by Wolfle (1991) found that gifted boys between third and fifth Grade often begin to underachieve to be on par with their less achieving male peers in order to maintain friendships.

4.5 Dynamic Testing

The literature reviewed so far has exposed methods of testing appropriate to identify gifted and talented students from both normal populations and special populations. 'Dynamic testing', such as Chaffey's (2002; 2003) Coolabah Dynamic Assessment model, should be discussed further because introducing dynamic testing will help to identify gifted underachievers, especially 'invisible underachievers' expected to be present in minority groups.

The literature on identification revealed that conventional tests (static tests) overlook the latent capacities of gifted children of diverse minority backgrounds. Since for many reasons their giftedness is masked and their potential has not developed into high performance, their high potential is not identified by these tests (Richert, 2003; Davis & Rimm, 2004; Chaffey, 2002a; Ford, 1996). It is believed that the best way to measure their potential is not through static methods, but rather through dynamic tests (Sternberg and Grigorenko, 2002).

According to Sternberg and Grigorenko (2002), dynamic testing is pre-testing followed by an intervention, again followed by a post-test (test-intervention-retest). It is a part of a larger process referred to as dynamic assessment. The broad definition of dynamic assessment is naturally linked with intervention, and thus the goal of dynamic assessment is to intervene and to measure cognitive change (Sternberg & Grigorenko, 2002, p. 30). Most forms of dynamic testing or assessment are developed to measure the learning potential of slow learners. Note, too, that here the concept of 'learning potential' only makes sense if you know what the starting point is, that is, that the pre-test is reliable, which is certainly not the case with invisible underachievers.

Chaffey's (2002a) Coolabah Dynamic Assessment is different: he attempts to address the perceived causes of the underachievement so that the child is able to perform at a level closer to their cognitive ability (Merrotsky, 2006). In either case, at the beginning of the dynamic assessment process, the child being tested can start at the 'zero or almost zero point' of having certain developed skills to be tested, and the intervention will provide all the necessary information for mastery of the tested skills. Thus, during dynamic testing, the previously acquired skills are not simply being tested, but the capacity to master, apply, and reapply skills taught in this testing situation is also assessed (Sternberg & Grigorenko, 2002). Therefore, dynamic testing has the potential

to identify giftedness in individuals who under-perform on one-off tests of cognitive ability.

4.5.1 Concept behind the Dynamic Testing

It is a well-known and empirically established fact that learning should match the child's developmental level (Piaget, 1955). To discover the actual relations of the developmental process to learning capabilities, we must determine at least two developmental levels. The first one is 'actual developmental level', which is determined by measuring the child's mental age using tests. This is the level of development of a child's mental functions that has been established as a result of certain already completed developmental cycles. The other developmental level is 'the level of potential development' (Vygotsky, 1978, pp. 208–209).

The Zone of Proximal Development (ZPD) was viewed by Vygotsky (1978) as the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.

According to Sternberg and Grigorenko (2002, p. 37) the Zone of Proximal Development reflected development itself: It is not what one is, but what one can become; it is not what has developed, but what is developing. Furthermore, the ZPD is a construct that exists neither within the individual nor within the social context. It exists only in the interaction between the individual and his or her social context, since it exists only in the individual's social interaction and is created by this interaction. It is because of its developmental, interactive, and forward-looking nature that the ZPD has received the most attention in the west (Sternberg and Grigorenko, 2002, p. 38).

Within this Zone of Proximal Development, with proper instructional support, students can be helped to reach a higher level of competency and understanding. For highly-able students working in their area of strength, this zone is much larger than would be the case for less-able students (Kirschenbaum, 1998). The focus of Vygotsky's work is the 'support' that is provided during various instructional contexts with varying instructors who may not necessarily be the teacher, but could be peers, parents, tutors, or mentors. Feuerstein et al. (1979), basing their work on the theoretical foundation of Vygotsky's concept of Proximal Development, constructed the Learning Potential Assessment

Device (LPAD), which is a comprehensive test of learning ability that uses the dynamic assessment method.

In the Coolabah Dynamic Assessment model, Chaffey (2002a; 2003) determined the effectiveness of dynamic testing as a method for identifying high academic potential in Australian Aboriginal children. In his study, he was able to identify successfully gifted underachievers, including invisible gifted underachievers. In his experiment were included two groups (intervention and control) matched on pre-test scores using Raven's Standard Progressive Matrices. The intervention group received a meta-cognitive intervention and the control group received a placebo intervention.

The significant feature in his study was that during his intervention, in order to achieve maximum engagement and performance, strategies were employed to overcome the effect of socio-emotional and cultural factors such as forced-choice dilemma, self-efficiency, and expectation issues that might have been present in the students and acted as possible inhibitors of achievement. The success of the intervention group demonstrates the importance of such strategies during this kind of intervention for students from minority cultures and low socio-economic backgrounds (Chaffey, 2003).

Another important feature in this study is that the items used were selected from the Learning Potential Assessment Device (LPAD) Set Variations 1, 11, and Variation B.8-B.12 (Feuerstein, Rand, & Hoffman, 1979). All these items are cognitive analogues of the Raven's Standard Progressive Matrices (RSPM). These items were presented in a similar form to the RSPM in order to establish familiarity with the format, and contained similar cognitive processes to the RSPM but used dissimilar presentations. In all, twenty-four (24) items were selected for this intervention, dealing with the major cognitive processes used in the RSPM.

Chaffey (2002; 2003) was able formally to identify gifted children, from culturally different as well as socio-economically poor backgrounds, who were previously suspected to be gifted underachievers, or who were previously believed to be average students and in fact were invisible underachievers. His Coolabah Dynamic Assessment model, or a model similar to it but developed for a specific cultural context, would be an ideal method to identify gifted children from backgrounds of disadvantage, such as low socio-economic status or cultural minority status.

4.6 Above-level Testing

In addition to underachievers, the literature review of identification has indicated the presence of another group of gifted children, that is, highly-gifted children, whose giftedness or talent could not fully be identified by intelligence tests (Silverman 1998) and by Grade-level standardized tests due to serious ceiling limits inherent in these tests. The identification process would not complete if the potential of this group of gifted achievers were not identified. Feldhusen (1991) proposed off-level or above-level testing as an approach to identify these highly gifted students, thus in this section the literature on above level testing should be briefly reviewed.

Due to the ceiling effect, tests designed for typical students or age-peers are not effective in detecting their full potential of highly-gifted students. These children may have potential for high-level performance in several academic subjects, so teachers should be alerted, by the discovery of one talent, to the probable existence of others (Gross, 2004). To assess the capacities of highly-gifted students, educators or psychologists should select instruments with an unusually high ceiling or, if such instruments do not exist, should use off-level or above-level tests (Gross, 2004).

According to Lupkowski-Shoplik et al. (2003), above-level testing is an educational procedure in which a test developed for older students is administered to younger students. When the students do well on a Grade-level test, having correctly answered most of the questions on that test, the test may indicate what they know, but it does not indicate what they are ready to learn. The results of an above-level test can tell what students are ready to learn.

The Australian Primary Talent Search (APTS) and the Australian Secondary Schools Educational Talent Search (ASSETS) (Gifted Education Research Resource and Information Centre) are examples of such above-level testing programs for academically gifted students. The Gifted Education Research, Resource and Information Centre (GERRIC) at the University of New South Wales, in association with The Connie Belin and Jacqueline N. Blank International Centre for Gifted Education and Talent Development (Gifted Education Research Resource and Information Centre) at the University of Iowa, have initiated these programs.

Chapter 5

Methodology of the Research

CHAPTER 5: METHODOLOGY OF THE RESEARCH

5.1 Introduction

The aim of the current study is to identify gifted students as understood by Gagné's Differentiated Model of Giftedness and Talent, which provides the conceptual framework to the present study. Hence, the methodology of the present study was designed to construct a model to identify highly gifted children, moderately gifted children, and gifted underachievers including invisible underachievers as aforementioned in Chapter 3 (Gagné, 1998, 2003). Further, there was a special emphasis placed upon identifying intellectual and academic gifts and talents during this study

Therefore, data were gathered to find answers to the following research questions in order to construct this model.

Research Questions

1. Who are the intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka who can be identified by means of achievement test scores?
2. Who are the of intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers, from the selected sample of Primary Grade level schools in Sri Lanka, who can be identified by means of Raven's Standard Progressive Matrices (RSPM) test and dynamic testing?
3. Who are the intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka who can be identified by employing Gagné's Peer, Teacher and Self-Nomination Forms (PTSNFs)?
4. Who are the intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka who can be identified by using Rogers' Parent Inventory for Finding Potential (PIP)?
5. Who are the gifted and talented children from the selected sample of the Primary Grade level schools in Sri Lanka who need further educational

challenge beyond their Grade level, identified by means of above-level testing?

6. What methods should be included in an identification model appropriate to identify intellectually gifted and academically talented Primary Grade students, including highly-gifted students, gifted underachievers and invisible underachievers, in the schools of Sri Lanka?

The following are the specific objectives that arose from the above research questions.

1. To identify the group of intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka by means of achievement test scores.
2. To identify the group of intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers, from the selected sample of Primary Grade level schools in Sri Lanka by means of Raven's Standard Progressive Matrices (RSPM) test and dynamic testing.
3. To identify the group of intellectually gifted and academically talented students from the selected sample of Primary Grade level schools in Sri Lanka by employing Gagné's Peer, Teacher and Self-Nomination forms (PTSNFs).
4. To identify the group of intellectually gifted and academically talented students from the selected sample of the Primary Grade level schools in Sri Lanka by using Rogers' Parent Inventory for Finding Potential (PIP).
5. To identify by means of above-level testing gifted and talented children, from the selected sample of Primary Grade level schools in Sri Lanka, who need further educational challenge beyond their Grade level.
6. To propose a model to identify intellectually gifted and academically talented students, appropriate for the Primary Grade level schools in Sri Lanka.

5.2 Research Methodology

The research design, population sample, and instruments will now be provided. Then the data collection, processes and analyses will be presented according to each individual research objective.

In the current study, the research objectives suggest that the study would need quantitative research, since a major part of the data collection of the study is dependent on test data and rating scales. However, during the final stage of data collection, interviews (which are a qualitative mode of data collection) were carried out in order to add more value and strength to quantitative data and to develop a case study (see data collection for research Objective number 6). As revealed by Morse (2003), using more than one method within a research study would enable the researcher to obtain a more complete picture of human behaviour and experience. This would also enable the researcher a deeper understanding of the results and as well as to achieve the desired research goals more quickly. Therefore, the current study uses mixed–method research, since it was conducted with a combination of explicit use of both quantitative and qualitative methods within the same study (Maxwell & Loomis 2003; Morse 2003). Further quantitative data and qualitative data would be triangulate, in order to identify mutual validation and to get a complete picture of the situation (see section 5.2.1.1).

5.2.1 Research Design

The sequential explanatory design, which is the most straightforward of the six major mixed method designs, was applied to the current study.

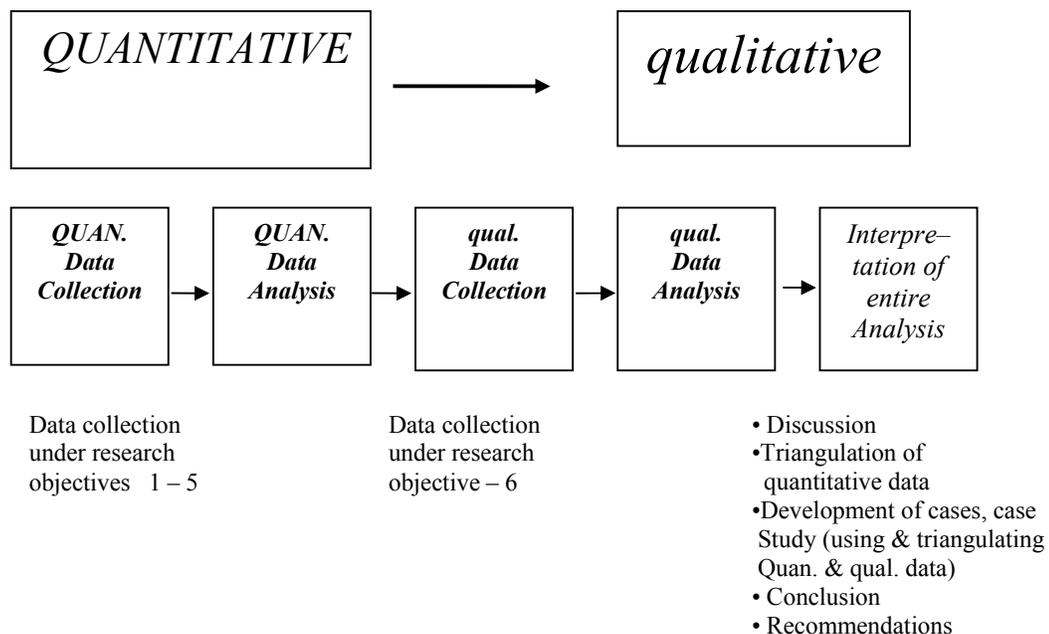


Figure 5.1: Design of the study (sequential explanatory design)
(adapted from Figure 8.4a Creswell et al. 2003, p. 225).

Therefore, the research was carried out by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data. Priority was given to quantitative data, and the two methods were integrated during the interpretation phase of the study (Creswell, Clark, Gutmann & Hanson, 2003). In this study, the integration of research methods resulted in a case study. The steps of the sequential explanatory design is illustrated in Figure 4.1

During this study, the data collected for research objectives 1, 4, 5 were numerical data (achievement test marks and IQ test scores). The data collected for research objectives 2 and 3 were through rating scales; however, the collected data were qualitative rather than quantitative due to the following reasons. Bogdan and Biklen (1998) recognised several features or traits of qualitative research. They further said these features are not expected to be in equal degree in a particular research. Some features could be completely lacking in a same research. The Naturalistic feature (the actual settings) applied to this study since the data collected from the teachers, students and parents (relevant to research Objectives 2, 3, 4 and 5) were carried out in the normal class room settings¹ and in the home environment² (The details of data collection are discussed under each objective). Moreover, as discussed in the next paragraph the current study consisted of more qualitative characteristics.

According to Bogdan and Biklen (1998), in qualitative research the data are descriptive, and the data collected should be in words or pictures rather than numbers. Even though the data collection for this study was done using numeric symbols (for example in rating scales and nomination forms), the collected data revealed certain characteristics of the students. In addition to these data, several cases, which included interviews with selected individuals, were also conducted towards the end of this study (discussed later in section 5.2.2.6). Additionally, the triangulation of data was carried out in order to give cross validation of the results, and give more understanding and value to the collected data. These activities added a more descriptive nature to the collected data.

¹ For research objective 3 students were asked to nominate their peers on certain characteristics in the nomination forms. Also teachers were asked to nominate the students on the same characteristics. Both of these nominations were done in the normal class room settings. Similarly data collected for research Objectives 2 & 5 (test data) was also done in the classroom settings.

² For research Objective 4 the data were collected from the parents through rating scales. Parents were advised to mark the ratings after observing their child's behaviours in the home environments for about 1–2 months.

Additionally, in the main study, no hypotheses were built, but the most appropriate methods that were available for identification of gifted students that belongs to all categories were applied to find solutions to the research questions. This feature is very similar to some forms of qualitative research: that is, qualitative researchers often do not search out data or evidence to prove or disprove hypothesis they hold before entering the study; rather, abstractions are built, as the particulars that have been gathered are grouped together (Bogdan & Biklen, 1998). Further, according to Hatch (2002), qualitative data analysis involves a deductive dimension. As patterns or relationships are discovered in the data; hypothetical categories are formed and supported by the overall data set. In this study, such patterns and relationships were discovered in triangulation of data collected by different methods. In addition, the researcher was concerned to ensure the perspectives were captured accurately (Bogdan & Biklen, 1998), therefore the data were cross-checked to ensure that the researcher was able to capture the accurate data. However, the literature on gifted identification revealed we could expect disparities among the data collected through different methods. For example, teacher bias (Rimm & Davis, 2004) could occur during the ratings and also there are doubts in predicted values of parent judgments (Trost, 2000). It was understood that there is a possibility of identifying the gifts or talents of students from any party out of peer, self, parent and teacher or IQ tests. Many research studies included multiple measures, some of which provide quantitative data and others qualitative data. Research studies conducted in naturalistic settings often use mixed-method research. For example, in the studies where the intervention designed to improve achievement takes on the form of an experimental treatment samples of teachers and administrators can be interviewed (Wiersma & Jurs, 2005). In the current study, such multiple measures were included: a short intervention program carried out as an experimental study; and several interviews, with principals, teachers, selected parents, and selected students (qualitative data) were conducted.

Finally, this study used qualitative reports, detailed narratives that included the voices of the participants being interviewed and built the researcher's interpretations by including enough detail and actual data to take the reader inside the social situation under examination (Bogdan & Biklen, 1998). When strategies derived from qualitative and quantitative methods are used within a single project, it is referred to as a mixed-methods design (Morse, 2003). Since in this study both quantitative and

qualitative were two major data collection methods the methodology of study could be concluded as a mixed method.

Further, according to the fundamental principle of mixed–methods research, methods should be mixed in a way that has complementary strengths and non–overlapping weaknesses (Tashakkori & Teddlie, 1998). It involves the recognition that all methods have their limitations as well as their strengths. Thus, the use of the fundamental principle means that data collection methods should be combined so that they have different weaknesses and so that the combination used by the researcher may provide convergent and divergent evidence about the phenomenon being studied. This fundamental principle could be applied to all stages or components of the research process (Johnson & Turner, 2003). In the present study, such a combination of data were carried out during triangulation of the research data and also in the final conclusion.

5.2.1.1 Triangulation of data

Denzin (1978) introduced the term ‘triangulation,’ which involved combining data sources to study the same social phenomenon. Since the present study was carried out as a mixed–method study, the triangulation of data was carried out during the data analysis. Triangulation of data was applied to the current study due to the following reasons. Triangulation is a means of mutual validation, which involves, combining methods to produce a ‘fuller’ or ‘more complete’ picture. Also, triangulation may be considered for the mutual validation of methods and research results so as to identify ‘threats to validity’, or it may be seen as a means to produce a more complete and fuller picture of the social phenomena under study (Erzberger & Kelle, 2003). The research literature suggests that teacher bias, and over or under estimation of the abilities of their own students through teacher and parent nominations as examples of such threats (Davis & Rimm, 2004; Trost, 2000).

The purpose of applying the phenomena of triangulation to the present study is to find out the most appropriate methods or method to incorporate in a successful package to identify the gifted and talented students in the primary education system of Sri Lanka. As revealed by the above literature, triangulating collected data by different methods would give a fuller and more complete picture of the gifted and talented students and about the appropriate methods of identifying them. In this study data triangulation (the use of multiple data) and across method triangulation (triangulation of

quantitative data collected for Objectives 1,2,3,4, and qualitative data (interview data) data collected for Objective 6) finally led to 12 cases and a final case study (Denzin, 1989). In many cases, the mixing of qualitative and quantitative methods will result in the most accurate and complete picture of the phenomenon under investigation (Johnson, 1995; Johnson & Christensen, 2000; Patton, 1990; Tashakkori & Teddlie, 1998)

5.2.1.2 Case study

Since the literature revealed that collective case studies lead to a better understanding, perhaps better theorising, the researcher ended the study by formulating 12 cases followed by the data triangulation. The researcher used ‘collective case studies’ or ‘multiple case studies’ for this purpose (Stake, 2000, pp. 435–454). Because the study was carried out to find a solution to the issue of identifying gifted students in primary Grades in the schools of Sri Lanka it was an instrumental case study extended into several cases.

A case study tells a story about a bounded system. It has working parts; it is purposive; it often has a self and also an integrated system. Further, it is common to recognise certain features within such a system, within the boundaries of the case, and other features outside it (Stake, 2000, pp. 435–454). In the current study the bounded system is the school, internally the researcher examined the suitable methods for identifying gifted and talented students and the possibility of implementing the methods identified by understanding the attitudes and competencies of teachers and other higher authorities (principal and sectional heads) in the schools. For example, since the study is concentrated on the identification of gifted students within the primary Grades in the schools, several features were identified within the system as well as outside the system. Teachers’ skills in identifying students’ giftedness through their behaviours and achievements, student self understanding of their own abilities, as well as peer’s views and parents’ views on giftedness and their skills in identifying their students’ giftedness are the features that were able to be identified within this system. In this study, the researcher examined more than one case and each case was concentrated into a single case study (Stake, 2000).

Additional to the above internal factors, specific social and economic background of the children and their parents and the attitudes towards such identification processes were identified as external factors in this case. Further, the extent of the collaboration

of the teachers and the parents in the task of identifying students was recognised. This attempt was to do a careful examination of the context of the case in order to better describe and explain the functioning of the case (Johnson & Christensen, 2004). In other words the researcher in this study was interested in a holistic description or picture of the each case and all the cases were consider as a whole in order to formulate an identification package to identify gifted and talented students in primary Grades in Sri Lanka.

5.2.2 Population and Sample

The target population of the study was about 1,610,688 students in primary Grades in government schools of Sri Lanka. According to the data in school census 2005, (Ministry of Education 2005) there are over 9700 schools in Sri Lanka. Since all of these schools contain primary Grades, the target population is found in all 9700 schools (Ministry of Education 2005). Four schools situated in the Colombo district of the western province were included in to the sample. A few photos of the selected schools are attached as (Appendix 5.1).

5.2.2.1 Backgrounds of schools included in to the sample

The research literature on the identification of gifted and talented children revealed that the identification procedures for students in cultural minority groups and with low socio-economical backgrounds should not be the same as students with high educational and high socio-economical standards (Richert, 2003 & Karolyi et al. 2003). Therefore, the researcher used her experience and awareness of school backgrounds to select the appropriate schools to include students that represent all these backgrounds. Since there could be differences according to the different backgrounds of the schools when introducing an identification package, the researcher considered each school as a single case to introduce the appropriate package that fitted with the each case, and finally all cases were studied to present a holistic approach in identifying gifted and talented students in Sri Lanka.

According to school census (Table 2.2 in section 2.2.5) out of 9723 schools in Sri Lanka, 646 are type 1AB, 1812 are 1C, 4238 are type 2 and 3027 are type 3. In a national level study ‘Achievement after four years of schooling’ (Perera et al. 2004) intended to measure the levels of mastery (the achievement levels of the students were measured using standardised written tests) in the subjects First Language (Sinhalese/Tamil), Mathematics and English Language after first four years of

schooling. This study revealed that the highest achieving schools are 1AB type schools and lowest achieving schools are type 2 schools. According to the same study, the achievement levels of other two school types, 1C and type 3 lie in between. Further, 9346 schools are mixed schools. Since the sample should be a best representative of the population, four mixed schools, one each from each type of schools, were included in the sample³.

The researcher undertook purposive sampling by selecting schools from the western province because the researcher resides and has worked in schools in this province for twenty years. There are nine educational provinces in Sri Lanka (A map showing 9 provinces of Sri Lanka is attached as Appendix 1.4). Each province is divided into several educational zones. For the convenience of the researcher, schools were selected from the three educational zones out of 11 zones of western province closer to the researcher's residence. That is, 1 type AB school from Sri Jayawardenapura educational zone, 1 type 1C school from Piliyandela educational zone, and 1 type 2 school and 1 type 3 school from Homagama educational zone were included to the sample. The type 2 and 3 schools in this sample are rural schools in the western province. Most of the students in these schools belong to a low socio-economical background. Even though the 1C type school, is situated in semi-urban area the majority of the students in this school belong to the families from low socio-economical backgrounds too.

Because of her prior experiences and knowledge of the surroundings and environments of the different schools, the researcher believed that the environment experienced by students from the two selected rural schools (type 2 & 3) are different from the environment experienced by the students from the selected 1C type school, which is a school in semi-urban area. Therefore, she included one each from three different school types even though the majority of students studying in all three schools are from low socio-economical backgrounds.

³ Even though majority of schools are type 2 & type3, the researcher included one school from each type instead of including the schools proportionately to the number of schools in each type. The reason for this is, since the number of parallel classes as well as the number of students is very low in these schools the researcher has to include many schools to the sample, which is a problem for the researcher to travel to many schools for data collection. However since it is a semi urban school according to the class records in type 1AB schools there are students who experience the same socio-economical backgrounds that experience by the students in type 2 & type 3.

The school records maintained by the class teachers, and the information gained from the teachers by informal discussions, revealed that even though the students from the rural areas are from a low socio-economical background they have their own house or live with their grandparents, and have space to play around and collect more experiences. Most of the mothers are non-working and they are able to pay more attention to their children. Since the number of students in each school was low, the researcher included two schools from rural backgrounds.

On the other hand, children from the selected semi-urban school (type C) are also experiencing low socio-economical backgrounds but their living environment is different from that of students from the rural schools. Most of them are living in rented houses and most of them are line houses with poor living conditions (The researcher personally visited some of the houses, both rural and semi urban to identify their surroundings, also the researcher has prior experience of these environments as she worked as a teacher for twenty years in the particular province). This disparity may effect their achievement in different ways. Since the semi-urban school belongs to type C, the researcher was able to include all school types to the sample thus it represented all the school categories in Sri Lanka.

The criteria during the sample selection from 1AB School was as follows. Since the 1AB urban schools are single sex schools, the researcher did not include the urban schools in the sample. Therefore, a mixed 1AB School situated in the semi-urban area of Western province, closer to the main city was included to the sample. Since this school is a National School students from high socio-economical backgrounds and also students from urban areas and students from middle class socio-economical backgrounds attend this school.

However, there are students from low socio-economical backgrounds too. Therefore, even though the sample was selected from the western province for the convenience of the researcher the sample represented a cross section of all levels of primary Grades in Sri Lanka. Moreover, since there were students from all socio-economical backgrounds in the sample the researcher strongly believed the sample was a good and fair representative of children belonging to different categories of the gifted and talented. Table 5.1 provides the general sample of the study.

Table 5.1 The general sample of the study

| Name of the school | School Type | Nature of the school | No. of students | No. of teachers | No. of parents |
|----------------------------------|-------------|----------------------|-----------------|-----------------|----------------|
| School J | 1AB | Mixed Semi urban | 353 (8classes) | 8 | 353 |
| School K* | 2 | Mixed Rural | 22 | 1 | 22 |
| School L | 3 | Mixed Rural | 21 | 1 | 21 |
| School M | 1C | Mixed Semi urban | 66 (2 classes) | 2 | 66 |
| Total | 4 | | 462 | 12 | 462 |
| Principals of the schools | | | | | |

* School K included in the pilot sample

5.2.2.2 Nature of the student sample

A purposive sample was selected to represent the population of primary level students. The study was limited to the primary Grades, and due to the above mentioned reasons, the sample was selected from the western province. Finally, only the Grade four classes from four Sinhalese medium mixed schools in three educational zones were incorporated into this study. The reasons for selecting primary Grade students in the sample included:

In Sri Lanka, primary level includes Grades from Grade 1 to Grade 5, which divided as Key stage 1– Grade 1 and Grade 2, Key stage 2– Grade 3 and Grade four and Key stage 3– Grade 5

The literature indicates the importance of identifying gifts and talents in the early stages of life and providing necessary provisions, stimulations and variety of materials to fulfil intellectual needs (Whitmore, 1980; Silverman, 1986; Mönks et al. 2000). Further, gifted children may display atypical behaviours in cognitive areas from early stages of their development when the proper identification and appropriate nourishing is not provided from early stages of their life (Whitmore, 1980; Silverman, 1986; Smutny, 1998; Mönks et al., 2000). Therefore, the researcher decided to investigate a possible package to identify gifted and talented students from the early school years, hence, the choice of including primary school students.

The data collecting procedures with the students were IQ tests, self-nominations, peer nominations and interviews. The researcher was more confident that Grade four

students are more suitable than younger students since they are matured enough than students of Grade 1, 2 and 3, to respond to such instruments. Not only that the students in primary Grades are in the same class with same peers at Grade 3 and 4. Since the data collection was done during the mid year and towards the mid of the year by that time students knew each other for one and half years. However, in the selected type 2, 3 and 1C schools students were in the same class with the same peers through out all four years.

The reasons for selecting Sinhalese medium students in the sample were that:

1. Even though the literature on gifted and talented education revealed that gifted students from minority groups and low socio-economical backgrounds might be underachievers, in Sri Lanka children of two major minority groups are provided education in their mother tongue (Tamil medium). Therefore, they are not as affected as the students from cultural minorities in western countries whose language of instruction is English where it is not their mother tongue.
2. To collect data from Tamil medium schools the researcher would have to translate the data collecting instruments into the Tamil language and also would have to engage a Tamil speaking research assistance on the data collecting procedures. The researcher planned to carry out the data collection and data analysis in Sinhalese medium schools herself. Therefore, the researcher felt it could have an effect on the validity of the research if someone else engaged in data collection in Tamil medium schools, especially because an intervention process was planned to be carried out during the data collection.
3. Most of the Tamil medium schools are situated in Northern and Eastern regions. The students in these areas may be underachieving for several reasons that arise due to the war situation that has persisted for more than 20 years. Therefore, in this region a research project should be pursued separately.

5.2.2.3 Nature of the other individuals of the sample:

The nature of the specific samples differed according to the research question. Therefore, the nature of the specific samples will be discussed separately with the relevant research Objectives. Nevertheless in the general sample, in addition to the students of Grade four classes of the selected schools, the parents of the students,

class teachers of the students, principals and sectional heads were included. Since the researcher aimed to include at least 10 teachers 12 classes were included. The study also included a pilot study. The researcher included one of the selected classes of the main study in the pilot study. While the data analysis of the pilot study was done before the main study, the findings of the pilot study were also included in the main study data analysis. Presentation, analysis and outcomes of the pilot study is discussed in the Appendix 5.11

5.2.3 Instruments of Data Collection

The research literature on gifted identification indicates that the multifaceted nature of gifted and talented individuals suggests that single method identification techniques would not be successful (Heller, 1991; Necka, 1991; Feldhusen & Jarwan, 2000). Therefore, the approach of this study was to administer several possible methods for identifying the gifted students from the sample. Consequently, multiple criteria were introduced as indicated in the 5 different research objectives. Therefore, the instruments for data collection will be considered separately in detail under each research objective.

5.2.4 Process of data collection

Obtaining data for this type of research was not an easy task because the researcher needed to collate accurate information which reflects the behaviours, skills, qualities, knowledge, and commitment to academic work, as well as the socio-economical backgrounds of the of the selected student sample. The researcher believes that it would be of much benefit if her supervisors could read and log the procedure for use of the methods used by the researcher during the each stage of the research. This type of log would normally include information on the setting, the relationship between the researcher and the participant of the study, procedures use to collect and analyse data and how and why the informants were selected, whether the collection of data are appropriate, sufficient and ethical. In brief, the researcher invites her supervisors to conduct an audit trial (Minichiello et al. 1999; Bassy, 1999).

5.2.4.1 Rapport building with principals, teacher and parents

To obtain this kind of sensitive data a researcher should have developed a positive rapport with the individuals of the samples. For a qualitative researcher it is essential to establish a rapport between the researcher and the participants. Such rapport is very important to assist the participants in obtaining a full and accurate understanding of

what is being investigated. Once such rapport was established, the participants would feel more comfortable and they would behave normally and feel comfortable in expressing their feelings and thoughts in front of the researcher (Minichiello, Fulton & Sullivan, 1999).

The researcher targeted collecting information from students, parents, teachers, and higher authorities of schools, such as principals and primary heads during the study. Further, the samples selected were from different backgrounds such as one school from semi urban area (type 1AB) where the sample represented the students from lower and upper middle class families as well as a few students from families with high socio-economical backgrounds and also a few students which represented the low socio-economical backgrounds too. Three of the other schools of the sample represented two village schools and a semi-urban school of which most of the students were from low socio-economical backgrounds.

The researcher's experiences as a school teacher and her nine years' experience as a university lecturer in the field of education, indicates she has a good understanding about the difficulties in approaching teachers, parents and sometimes even the principals in this type of task. Since the school cultures in the schools in different environments were different, she further recognised that adapting the same procedure to build rapport with all schools would not be effective. Therefore, about three months prior to the formal data collection the researcher visited the schools.

The researcher believed it was worth highlighting the awareness of giftedness and talents to teachers, parents and the children, prior to the formal data collection, which would help to set a favourable environment for the study. Initially, the researcher approached the principals of the schools, explained the purpose of the study and its importance to the students in the sample as well as how the primary students may benefit from the outcomes of the research. Further, the researcher explained the need of increasing awareness of identifying gifted abilities to the parents, teachers and the students, which would be helpful in the data collection process of the intended study. The principal of the 1AB School directed the researcher to the primary head. In addition, the principal personally talked to the primary head and asked her to cooperate in the study. The principals of the other three schools called the class teachers to the principal's office and asked to render their assistant to the researcher. There were only two parallel classes in type 1C School and one each in the type 2 and type 3 Schools.

The researcher was able to conduct a discussion to highlight awareness of the needs of gifted students to the teachers of the Grade 3 and Grade four class teachers of the 1AB school together with the primary head. In the other three schools, the researcher was able to talk to the class teachers of Grade 3 and 4 classes to make them aware of gifted students.

The class teachers of the 1C, type 2 and type 3 Schools and the primary head of the 1AB School arranged for parent meetings and the principal through a letter informed parents. In 1AB School, the teachers proposed the best day to address the parents is the parents' day that they have scheduled to be held on once a month on each 3rd Friday of the month. Therefore, the parents of the 1AB School were informed about the awareness discussion, which was to be held on the parent's day. In the other three schools special dates were assigned for the same purpose. The researcher was able to approach about 2/3rd of the parents of type 1AB School and almost all the parents of two village schools (1 of type 2 and 1 of type 3). Parent participation of the semi-urban school (Type1 C), which represented students mostly from low socio-economical backgrounds were low. It was about half of the expected sample.

At each awareness session, the researcher discussed the characteristics of gifted students and their behaviours, including possible negative behaviours towards school, home academic work, as well as other activities with both the parents and teachers. Further, the importance of identifying and give necessary provisions according to their ability levels were also discussed.

Principals and teachers of all the school types showed very positive responses regarding the awareness program. Most of them were able to understand the importance of this research and raised many questions to clarify the purpose and the procedures of data collection and their role in the research. The researcher requested they keep observing the behaviours of their children until the data collection started and try to identify the behaviours of their children during their participation in day-to-day life activities. Such as, while they were playing, studying, associating with friends, undertaking responsibilities, in social events, in emotional situations and the like. The researcher provided her contact number to the teachers and parents to contact her if necessary. The parents of the two village schools showed the highest interest in the discussions and had many things to discuss, especially, about the interests and behaviours of their children. They thanked the researcher for making

them aware of the characteristics that they had not noticed before. The researcher had built a good rapport with the principals, teachers and the parents of all the schools. Even though a close rapport with respondents opens doors to more competent research, the researcher knew such closeness might make the researcher become the spokesperson and that that might create problems. For example, difficulties such as losing distance or objectivity may cause the researcher to forgo their academic role (Fontana & Frey, 1994). Therefore, the researcher was careful not to create such a situation. Since the researcher was an academic attached to the Faculty of Education in one of the universities of Sri Lanka, the researcher was able to earn a respect for her research and positive attitudes towards it. Therefore, even though the researcher was able to build a good rapport with the respondents, objectivity of the study was maintained and no other problems were created.

The researcher made visits to the 1AB School on Fridays, so many of the parents were able to contact the researcher and discuss or clarify some of the behaviours of their children that they had noticed. Since most of the mothers of the village school are housewives they used to visit the school daily to bring their children to and from school. Therefore, the researcher was able to talk to them on Thursdays of each week. It was very difficult to approach the parents of type 1C School. The researcher noticed they paid the least interest and participation on the research. The reason for this was that most of the mothers are working mothers (on a daily paid basis). Further, the researcher understood that the parents showed least participation in the education of their children. Since this behaviour of parents is different from the parents of the other three schools, the researcher discussed this with the class teachers. The class teachers too agreed with the researcher. Teachers pointed out because of their poor living status that they neglected their children; they concentrated on acquiring money to cover their day to day expenditures. Additionally, most of their families are nuclear families. The mothers have to look after their younger children and therefore cannot leave them at home to attend parents meetings or any other events at the school. During the data collection for Objective 6 the researcher visited some of their homes and found the above situation persists in many of these houses. Further, a mother of one student came to school carrying her baby child with her when the researcher invited her for the interview at the school.

5.2.4.2 Rapport building with students

By the time, the researcher tried to approach the students she was not a stranger to them

as she had visited the schools several times to meet the teachers and parents.

Principals and the teachers of school types 1C, 2 and 3 were flexible and the researcher was able to find half an hour's time period to talk to the students once a week.

In school type 1AB since the teachers as well as parents were very keen on academic work, the researcher realised the difficulty of getting half an hour's time once a week for her task. However, the researcher was able to get 10–15 minutes once or twice a week for each class. Also teachers did cooperate with the researcher by giving permission to approach the students when the class teacher was absent from the school. Therefore, the researcher was able to spend a considerable period with Grade three and four students of the 1AB School too. However, the researcher did not visit all the school types regularly in all four weeks of the month during the six months period prior to the data collation.

As an initial step of rapport building with the students the researcher introduced herself briefly. Then the children were given opportunities to tell their names and to talk about their hobbies, favourite games, favourite subjects, and their future aspirations. Further, the children were given opportunities to tell stories, sing songs, recite poems, display dances, do drawings and to exhibit any other talents they possessed. The researcher always paid special attention to the quiet children and tried to motivate them to develop their self-esteem. It did not take a long time for the students to be comfortable with the researcher.

Prior to the major study, with the ethics approval by the University of New England ethics committee (HE06/174) the consent to conduct the study in the selected schools were obtained from the higher official of Ministry of Education and the principals of the schools. Consent for the participation of teachers and parents of the children too were obtained. Further, parent consent for their children to participate in the study was also obtained (Refer to Appendix 5.2 for copies of the consent letters).

5.2.5 The Procedures of Data Analysis

Since the data analysis, for the different objectives are different, data analysis will be discussed under each objective separately.

5.2.6 The Methodology of Data Collection for Individual Research Objectives

5.2.6.1 Research Objective 1

To identify the effectiveness of achievement test scores in identifying intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers, in primary Grade level schools in Sri Lanka

5.2.6.1.1 Sample for the research Objective 1

Since the Objective 1 of the study was to identify the effectiveness of achievement test scores in identifying intellectually gifted and academically talented students in the sample, the whole student sample was included for research Objective 1.

5.2.6.1.2 Data collecting instruments used for research Objective 1

According to the research literature, intellectually gifted students perform or show the potential to perform at substantially high levels of talents when compared with others at the same age (U.S. Department of Education, 1993, p. 3). These students exhibit high talents in intellectual areas, or specific academic talents, or talents in both intellectual and specific academic disciplines. The researcher selected the two academic disciplines, Sinhalese language and Mathematics. The teacher-made tests and assessments can be effective identification tools for identifying best performing students (Merrick & Targett, 2004). Therefore, the researcher confirmed that those who belong to the top 10 percent in achievement marks in any one of the two disciplines could be regarded as academically talented. Thus, the available achievement Mark sheets of the subjects' Sinhalese language and Mathematics were the data collecting instruments.

5.2.6.1.3 Process of data collection for research Objective 1

The data collected for research Objective 1 were achievement test marks of the subjects' Mathematics and Sinhalese language. Achievement test marks of the mid year test of the individuals in the sample were obtained from the mark sheets.

5.2.6.1.4 Procedures of data analysis for research Objective 1

Achievement tests conducted in the different schools were different. Therefore, marks of each subject of each student were tabulated against the student number according to descending order of the subject marks, separately according to the classes. Those who were in the top 10% of the sample in either Mathematics or in Sinhalese were considered as academically talented students.

5.2.6.2 Research Objective 2

To investigate the effectiveness of Raven's Standard Progressive Matrices (RSPM) test and Dynamic Testing to identify intellectually gifted students including gifted underachievers and invisible underachievers.

5.2.6.2.1 Sample for research Objective 2

Since the Objective is to identify intellectually gifted students, gifted underachievers as well as invisible gifted underachievers, the data collection was carried out within two stages. At the first stage, the whole class was tested with the RSPM test. At the second stage some selected students who were not identified as gifted during the first test underwent an intervention program and were re-administered the RSPM test.

Therefore, the samples for the two stages were different and were as follows:

Sample for the stage 1, included all the students of Grade four classes in the general sample of the selected schools.

Sample for the stage 2: included about 112 students identified from the sample of stage 1 from 6 classes were included in to the second sample. For this sample, students who showed different levels of mental ability were included, such as the students who scored average marks, below average marks, and above average marks were included in this sample. Students who scored below 85th percentile rank were the majority of the sample. Students were divided into an experimental and a control group. The researcher was careful to include approximately equal samples in both the experimental and control groups. However, only 45 students from control group and 56 students from the experimental group sat for the post-test (Details of the two groups are included in Appendix 5.3). The marks they obtained during stage 1 were considered as their pre-test marks.

5.2.6.2.2 Data collecting instruments used for research Objective 2

The National Educational Longitudinal study, by the U.S Department of Education, 1991 (cited in Borland & Wright, 2000; Chaffey, 2002; Richert, 2003; Rimm & Davis, 2004), revealed that gifted students from minority groups and gifted students from low socio-economical backgrounds may mask their giftedness for several reasons. Therefore, their giftedness may not be developed into talent (Gagné, 1997, 2003) and they may not be identified by formal intelligence tests, standardised tests or achievement tests. Also during the studies carried out in Sri Lanka by Dias (1996), Alwis and Rupasinghe as cited by Perera et al (2004), have identified that the

students' performance in schools in low socio-economic backgrounds are poor and unsatisfactory. This suggests that low socio-economical backgrounds may affect the performance of students. Therefore, when trying to identify gifted students in schools in Sri Lanka there is a tendency to overlook gifted underachievers if identification is only from achievement test marks. Additionally, there is controversy about validity and reliability on teacher and parent nominations. Hence, the student sample was tested with a non-verbal test too, to identify their academic/intellectual potential. Therefore, at both stage 1 and stage 2 a non-verbal test 'Raven's Standard progressive Matrices' (RSPM) test was administered to the sample in small groups (6–8 in a group).

For Objective 2 the data collection was done in 2 stages. The reason for this is, the data collection aimed to identify the high intellectual potential of gifted underachievers including 'invisible underachievers' too. At this stage, a dynamic testing process was to identify 'gifted underachievers' whose giftedness is mask due to several reasons as discussed in chapter 4. During dynamic testing, a pre-test, short intervention and post-test were carried out

5.2.6.2.3 Nature of the instrument: Raven's Standard progressive Matrices (RSPM) test

This test is constructed to measure the educative component of "g" as defined in Spearman's theory of cognitive ability. Educative ability is the ability to create new insights, the ability to distinguish meaning in confusion, the ability to perceive, and the ability to identify the essential relationship. In addition, an essential feature of educative ability is the ability to generate new, largely non-verbal concepts, which make it possible to think clearly (Raven et al. 2000).

This is a standard test with 60 problem items arranged into five sets, namely A, B, C, D & E, and 12 items were included into each set. Each item contains a figure with missing piece. In sets A and B there are six alternative pieces to complete the missing piece and in sets C, D and E are eight such pieces. The test taker has to select the correct piece to complete the missing pattern in each item. The first item of each set is easy to work out. The problems, which follow, build on the procedures of those that have gone before and become progressively more difficult. The order of the items provides the standard training in solving the problem. Further, to ensure constant

interest and to reduce fatigue, each problem is boldly presented and accurately drawn and also pleasing to look at (Raven et al. 2000).

By using this test, a person's cognitive abilities could be measured independent of literacy or numeracy skills. Therefore, it is a culture fair instrument and can be used to measure the student's potential to learn (Chaffey 2002a). The test provides a reliable estimate of a person's capacity to think clearly when allowed to work steadily and undisturbed at his or her own speed. It could be used with persons ranging in age from 6 years to adult.

5.2.6.2.4 Reliability of the instrument

Over 40 studies dealing with reliability of the instrument are reported (Raven et al. 2000). These studies cover a very wide age-range, many cultural groups, and clinical as well as normal populations. Internal consistency studies using split-half method estimates result in values ranging from .60 to .98 with a median of .90. Test-retest correlations range from a low of .46 for an eleven-year interval to a high of .97 for a two-day interval. The median test-retest value is approximately .82. Coefficients close to this median value have been obtained with time intervals of a week to several weeks (Raven Standard Progressive Matrices, online). In general, the test shows good reliability, terms of internal consistency or retest reliability (Raven et al. 2000).

5.2.6.2.5 Validity

Spearman believed the RSPM to be the best measure of 'g'. The majority of studies, which have factor, analysed the RSPM along with other cognitive measures in western cultures report loading higher than .75 on a general factor. Concurrent validity coefficients between the RSPM and Stanford-Binet and Wechsler scales range between .54 and .88, with the majority in the .70s and .80s (Raven Standard Progressive Matrices, n.d.).

5.2.6.2.6 Intervention items

At stage two intervention items were used to develop the cognitive ability (in order to provide meta-cognitive intervention) of the suspected gifted underachievers, especially the "invisible underachievers". The items set Variations 1 and 11, variations B 8, and figural training problems 1, 2, 3, 4, 5, 6, 8 of Learning Potential Assessment Device (LPAD) were used during the intervention process. In addition to these items some items prepared by the researcher too were used during this process. The items selected from the LPAD and the items prepared by the researcher were

similar to the RSPM items. The items were presented to establish familiarity with the format of RSPM (Appendix 5.4).

5.2.6.2.7 Process of data collection for research Objective 2 – Stage 1

Test centres: Students of the sample were nine years old. The test was administered individually, but 6–10 students were tested together. They were isolated from other children in a separate space from the normal classroom. In School J, the researcher was able to do the test in a separate room adjoining to the primary library. In School M the researcher was able to get space in the library of the primary section. The class teacher of School K arranged a small hut adjoining the school building. Since there were only 20 students in the class it took only two days to complete the test. A small hut with only a roof on four wooden poles and no walls that was in the corner of the schoolyard was the test centre of the School L. It was a very quiet place.

Administration of the test: By the time of the test administration, the students were very familiar with the researcher. Each child was given a set of test items (RSPM test) and an answer sheet (Appendix 5.5). Students were asked to put the student number in the correct place, advised to use a pencil to mark the answer and also not to put any other marks on the test booklets. They were also asked to write the name of the school, date of birth and the age but many were not able to put the date of birth and the age properly as their English was not good (The titles of the answer sheets were in English). The researcher was able to get the date of birth from the students attendance register and filled in the date of birth and age later.

The researcher explained the test to the students and modelled matching a missing piece that was needed to complete the example pattern. At the beginning, students were asked to pay attention to the first item of set A. The students were asked to think of the missing piece that was suitable to complete the answer. Then they were asked to choose the correct piece from the six pieces given below the problem 1. Then the students were asked the number of the correct piece. When the wrong answers were given the researcher asked for the reason the student selected the particular answer and explained why it was wrong and led them to find the correct answer. Then the students were advised how to mark the correct answer on the answer sheet: they were asked to erase the wrong answers completely before marking the correct one, and not to mark more than one answer. Since there were only 6–10 in a group, the researcher went to each student and checked whether they had marked it correctly. The

researcher repeated the same procedure with item 2 of the second set. Then the students were allowed to work on all 60 items according to their own pace and speed. The researcher walked around the classroom to see whether the students were completing the assessment in the correct manner. Students were given time to re-check their answers. However, there were students who had marked more than one answer to the same problem.

5.2.6.2.8 Procedures of data analysis for research Objective 2 – Stage 1

The data collected were a measure of cognitive ability or the intellectual capacity of the students who were in the age cohort of 9 – 9 1/2 years. Since there are no standardised RSPM norms for Sri Lanka, the researcher decided to take top 10 percent from the sample as gifted as explained by Gagné’s model. The cut off mark for each percentile band were calculated for the marks obtained by the sample. The students who were in above the 90th percentile band were in the top 10 percent group. These percentile bands and cut-off marks were compared with the norms of India, a country that also experiences a similar cultural and socio-economical background like Sri Lanka. It was found that the percentile bands of Sri Lanka (cut off mark) are much higher than Indian norms and very much closer to British norms (Mark lists and percentile bands are included in Appendices 6.2).

According to the RSPM manual (Raven et al. 2000), if a score lies at or above the 95th percentile the people of the same age group could be considered as intellectually superior. Therefore, the researcher concluded that the students who scored 47 or more than 47 marks were intellectually superior. Therefore, the data analysis are expected to identify gifted students from the sample who are moderately gifted or highly gifted (highlighted by Gagné (1998, 2007), and discussed in more details in chapter 3).

5.2.6.2.9 Process of data collection for research Objective 2 – Stage 2

The purpose of data collection at this stage was to find out whether the dynamic testing is effective to identify ‘invisible gifted underachievers’ in primary education system in Sri Lanka. Even though the cultural disparities have affected the selected sample minimally, socio-economical disparities could effect the achievement of the individuals of the sample. As revealed by the literature, the gifted potential of the students from adverse backgrounds, when not developed into talents, could not be identified by tests (Chaffey, 2002; Davis & Rimm, 2004; Richert, 2003). It is believed that the best way to measure developing expertise is not through static methods but

rather through dynamic testing (Sternberg & Grigorenko, 2002). Therefore, the researcher conducted a dynamic testing process with a selected student sample to identify whether the students have shown their fullest intellectual capacity since the RSPM was administered during the first stage. The marks obtained at the first stage were taken as pre test marks of the individuals of the selected sample.

Experimental design of the dynamic testing procedure: The dynamic assessment model used for this study was developed by the author, influenced by the research of both Feuerstein et al. (1979), and Chaffey (2002b). An experimental group as well as control group were included in the experiment. The majority of the students in two groups were students who had scored below the 75th percentile band. However, students who scored in between the 75th to the 95th percentile bands were also included. The reason for this selection is that even among these gifted students there may be students who have not developed to their fullest potential. About 112 students were included in the sample. It was planned to include 130 students (65 in the experimental group, and 65 in the control group) for the sample of stage 2. However, during the intervention processes some selected students were absent from the school so they were not included. 56 students were in the final experimental group and 45 in the control group.

As revealed by Vygotsky (1978), some individuals have the potential to develop more cognitive skills and competencies rather than what they have already developed. With adult guidance, they were able to achieve more complex problem solving capabilities, sometimes their capabilities were at a level above their age. This could be done through a metacognitive intervention.

Therefore, the intervention or experimental group received a metacognitive intervention to explore the each child's cognitive potential. The items used for this intervention were discussed under data collecting instruments in this section. Some students' low marks in the pre test may have been due to socio-emotional issues and inefficient metacognition rather than their low cognitive potential (Tzurriel & Feuerstein, 1992). Metacognition, which is in the central place of cognitive development, can be defined as awareness and management of one's own thought, or thinking about thinking (Kuhn & Dean, 2004). This is critical for effective learning and academic achievement. Further, Chan (1996) has observed a close relationship between motivation and metacognition. Therefore, it is necessary to address the socio-

emotional and cultural factors, which may be possible inhibitors of metacognitive development. Since the students in the sample were Sinhalese medium students, cultural factors may not have affected the results.

The Meta-cognitive intervention: Since self-efficacy has been identified as an important component in developing expertise (Sternberg, 2001) attention was given to reducing self-doubt and to experience the positive influence on self-efficacy during the intervention. Thus, the researcher believed that the students who showed low academic performance might be due to the low self-efficacy with respect to their academic work. Identifying personal accomplishments are the most powerful of the factors that positively influence the self-efficacy (Bandura, 2003). Consequently, the researcher designed the intervention program to develop self-efficacy by introducing very easy tasks at the beginning and slowly introducing difficult tasks towards the end of the intervention. While the students were working on them, they were motivated by the easiest tasks that they accomplished but they were not praised unnecessarily. The researcher made sure the students used their skills and competencies during the process, which helped them in their meta-cognitive development. Also, they were not told pass or fail, good or bad (because if some students face the problem of the forced-choice dilemma they would not like to be praised in front of their peers. Instead the researcher let them enjoy the tasks, guided, and motivated them to find the correct answers).

The placebo intervention with control group: Control group too had an intervention. However, it was a placebo intervention designed to give a false impression that they too were undergoing an intervention. The intervention items were not same as the items used with the experimental group. Solving puzzles, matching pictures and words, spelling contests are some of the items used with them. However, the duration, venue and the group size was similar to the experimental group.

Administration of post-test and far post-test: The intervention was carried out through out a week. One week after the intervention, RSPM was re-administered to both groups. About six weeks after the post-test a far post-test (RSPM) was administered to both groups to investigate the persistence of the pre-test to post-test gains.

5.2.6.2.10 Procedures of data analysis for research Objective 2 – Stage 2

Data tabulation: The raw score of the pre-test, post-test and far post-test of both experimental and control groups were tabulated in three parallel columns. Further, in a separate column adjoining each raw score column, the percentile band of each score was indicated (Details of the marks and the percentile bands are illustrated in Appendix 6.3).

In order to determine whether there is a significant change in the dynamic testing performance between the control group and intervention groups the RSPM scores were examined using the ANOVA test. The results will be discussed in the next chapter. Finally, the students who scored above the 90th percentile band at any one of three tests was considered to be gifted, and in the same manner, those who scored above the 95th percentile were considered to be moderately gifted.

5.2.6.3 Research Objective 3

To examine the effectiveness of employing Gagné's Peer, Teacher and Self-Nomination forms (PTSNFs) in identifying gifts and multi-talents, including intellectually gifted and academically talented students, and including gifted underachievers and invisible underachievers, in primary Grade level schools in Sri Lanka.

5.2.6.3.1 Sample for research Objective 3

Since the objective is to examine the effectiveness of peer, self and teacher nominations in identifying giftedness and talented, all the students of Grade four classes in the sample, and the teachers of these students (12 teachers), were included into the sample at this stage.

5.2.6.3.2 Data collecting instruments used for research Objective 3

Since Gagné's model is the conceptual framework behind this study, the researcher intended to identify the students who are either gifted or talented or both. This model reveals the possibility of possessing several gifts and talents in many other domains other than the intellectual domain and fields other than the academic field. Therefore, the ideal data collecting instruments should be able to identify such gifts and talents in many domains. Literature on identification revealed, such tools could be both objective and subjective measures. Data collection for research Objective 3 was carried out by using subjective measures. Teacher, peer and self-nomination forms were the instruments used for this purpose.

Teacher, peer and self-nomination forms used in this study was Tracking Talents (Gagné, 1999). This is the end product of a five-year research project named 'Project PARIS' of which the director of the project was Gagné. Because the conceptual background to this study is provided by Gagné's model, the researcher decided to use 'Tracking Talents' as the data collection instruments under the 3rd research question. The purpose of administering 'Tracking Talents' nomination forms were, to gather information from multiple sources about multiple abilities in the students. The Peer, Teacher, and Self are the multiple sources (PTSNFs). This instrument provides schools with a powerful tool for identifying gifted (according to Gagné, gifted is potential) students. Not only the cognitive abilities and academic talents, but social and physical abilities, technological and artistic abilities, as well as interpersonal abilities could be identified using these nomination forms. The significance of these forms is that the same form could be used for teacher, peer and self-nominations (Gagné 1999).

Nature of the instrument: PTSNFs exist in two forms: A & B. Each form is composed of 12 items. Items in form A covers abilities in Intellectual/Academic, Mechanical/Technical, Arts (drama) and interpersonal abilities (ethical/affective). Items in the form B cover Physical abilities, Arts (music), Arts (visual) and Interpersonal abilities (social influence). After the end of the five-year research project these areas were identified as the areas of abilities that students manifest in the North American school environment and that are easy enough to assess by peers and teachers (Gagné, 1999). (Refer to Appendix 5.6 for copies of the PTSNFs, including Sinhalese translation used in the study).

Each item in form A and B are composed of 4 elements: an icon that illustrates the subject of the item, a title that specifies the type of talent being sought, a behavioural description of that talent and three circles in which are placed the students' choices. The student's identification number was used instead of their names and placed in the appropriate box in front of each item. In order to create a student identification number (SIN) the researcher prepared lists of students for each class in the same order of the class attendance register so that the SIN was the same number as the attendance register. The author of the 'Tracking Talents' manual has advised to prepare the class lists in the alphabetical order of the surnames. However, with her experience the researcher knew that the students and the teachers are more familiar with the serial

numbers and the order of the class register, which would be easy for them to match the students name with the SIN of a particular student (Most of the students know serial numbers of the peer's in the register). Also, since the students are primary students they are not familiar with the surnames and most of them knew each other by their first name (A sample of the class list is in Appendix 5.7)

Minimum Grade level and class size: The minimum Grade level recommended by the author is Grade four. The class size is recommended as minimum of 15 students and preferably 20 or more. The sample of this research was Grade four students and minimum class size of the sample was 20, thus recommended minimum requirements were fulfilled by the sample of this research.

Reliability and Validity of the instrument: This instrument (PTSNFs) is an end product of five years of research. Three major studies in 1988, in 1989 and in 1998 have been conducted before finalising the present instrument, and both reliability and validity of the instrument were measured during those studies (Gagné, 1999).

Reliability: Reliability of the peer and teacher nominations had been examined with three sets of results namely: number choices, inter-peer agreement (IPA) and stability indices. The number of choices made by the students affected the reliability of the talent scores so the decision was to maintain three choices in the final form (Gagné, 1999).

In the case of the instruments based on interpersonal judgments, IPA is the most important type of reliability. A high level of IPA means that a majority of the other judges (Gagné, 1999) reproduces the choices of a typical judge, almost in the same order. Using research data of 1988 study, IPA coefficients (Cronbach's α) had been computed, one for each item in each group of students from each data collection. Variations among IPA coefficients were observed, and only 9 items out of 40 items reported had IPA coefficient below 0.75, a commonly recognised minimum threshold of acceptability. Finally, 12 items had been included in the final A and B Forms. However, when using the instrument in identifying gifted students just counting the number of 40+ scores across the 12 items gained by the members of a particular group one can decide on the IPA values relevant to a particular group. That is, if the number of 40+ score values are fewer than 4 or 5 (the average is nine) then the level of peer agreement within that group is questionable (Gagné, 1999, pp. 36).

Further, reliability was examined in the terms of stability indices. The term stability refers to the reproducibility of measures over time, either short periods or longer periods. It was noticed IPA and stability coefficients were closely related (Gagné, 1999).

Validity: The validity of the instrument is the extent of how accurately the scores obtained by the instrument represent the individuals 'real' status in the trait measured. Gagné (1999) discussed six different sets of empirical data that could directly affect the validity of the Tracking Talent scores.

Effect of self-nominations on validity: Using the data of the previous studies, conducted in 1989 and 1996 the IPA coefficient (Cronbach's α) has been computed with and without self nominations and revealed that self nominations have not shown much adverse effect on the talent scores.

Effect of friendship and nominations on validity: It was believed that students might be tempted too often to name their 'best friend' irrespective of that student's real abilities, thus jeopardising to some degree the validity of the peer scores. However, when the scores were computed with or without 'best friend' choices they had a correlation of .987 on average. Thus, it was clear that the 'best friend' nominations have no significant impact on validity of talent scores (Gagné, 1999).

Validity of peer verses teacher nominations: As cited in Gagné (1999) the relationship between peer and teacher nomination scores was examined from various viewpoints using data from study 1. Some of the observations were; the average peer-teacher correlation was a moderate .52. This shows a low agreement between judges. It may be due to teacher 'scores' being just four ranked choices plus a lot of zeros for all the non nominated items and also the judgments of a single individual.

Teachers are not always very good judges for assessing abilities that are rarely exhibit in the school environment, for example, handyman (Mechanical), and dancer (Arts). It was revealed that there is a strong relationship between peer and teacher nominations in items like lightning (Academic), Hercules (Physical), encyclopaedia (Academic), programmer (Mechanical) and musician (Arts). Also the least relationship was between the items tireless, confident, stimulator and singer. There was a significant but small overall Grade effect. That is, a stronger relationship between peer and teacher scores in Grade 5 (.54) and 6 (.53) than in 4 (.49) were indicated.

Finally, a strong correlation (.75) was found between the peer–teacher correlations and the IPA coefficients when an item generates high agreement among students, it also tends to generate high agreement between students and teachers and vice versa. *Validity of gender differences in abilities:* When the data bases of studies 1 and 11 were examined (Gagné, 1999) in the case of items like Mechanic, Hercules, and Comedian mostly the boys were nominated. Also mostly girls were nominated for items like Dancer, Singer and Musician. Also boys nominated proportionately more boys in the case of ‘male’ (check throughout whether key words have one or two speech marks as direct quotes usually have two speech marks) items, and vice versa for girls. Gagné (1993, 1999) has concluded such gender ratios represent real differences in the abilities manifested by boys and girls in the school environment. Since similar disparities in talents among the boys and girls are also visible in the school environments in Sri Lanka, the researcher expected a similar pattern of nominations within the Sri Lankan context.

Concurrent validity: Assessing concurrent or predictive validity is a difficult task in this type of instrument because there is the need to gather data on at least 24 different criterion measures to compare the data gathered by the Tracking Talents instrument. However, taking the school Grades of end of year tests the correlation has identified with the academic items of the instrument. It was revealed that peer judgments are closely related with the test marks than with the judgments of teachers (Gagné, 1999).

By looking at the reliability and validity measures the researcher used the ‘Tracking Talents’ instrument with confidence in measuring the gifts and talents of the desired sample of the current study. Further, the researcher carried out a pilot test with 20 students to identify the reliability of the instrument in the Sri Lankan context. Data analysis of the pilot test is discussed separately (Appendix 5.11).

The instrument was translated into the Sinhalese language, which is the mother tongue, and the language used in Sinhalese medium schools in Sri Lanka. Three primary teachers, and a master teacher of primary teachers who has postgraduate qualifications in education examined the translated forms. Necessary changes in wording were done according to their feedback. In order to clarify whether the students could understand the content of the instrument the researcher made 20 copies of Form A and B and distributed among students. They had difficulty in recognising the icons of some items. In addition, the title of the each item was removed as the

researcher found that the Therefore, the researcher replaced some of the icons in the original forms by pictures, which are more familiar and matched with the Sri Lankan context (See Appendix 5.6). Students were confused by the titles. When translating the titles into the Sinhalese language more than one word was needed to give a title in Sinhalese language. Instead, each item was clearly explained in the description.

5.2.6.3.3 Process of data collection for research Objective 3

Prior to the main study during the school visits, the researcher had discussions with students on their abilities (during the rapport building stage). At this stage the tracking talents forms A and B were distributed among them to raise awareness about the gifts and talents that they may or may not possess. The researcher had to engage in this action with all the items on the forms for several days as she had a very limited time to spend with the students on each day. The forms were collected back after discussions.

During the main study the students were instructed about how to do nominations using the Forms A and B. They were told about the possibility of nominating themselves when appropriate and also advised not to do such a nomination if they are not genuinely talented in a particular field. The forms A and B were administered on different days. Form B was administered after 5 – 7 days of administering Form A. A copy of the student name list (Appendix 5.7) with Student Identification Numbers (SIN) was distributed to each student along with form A and B. Student lists were collected with the completed Form A in order to give it with Form B. This process was repeated with all the twelve classes in the sample. The researcher was able to collect data from the absentees in between the data collection period and the teachers also completed the forms along with the students.

5.2.6.3.4 Procedures of data analysis for research Objective 3

Item numbers verses SINs of each class were tabulated in separate sheets (Appendix 6.5). The sum of the marks obtained for each item for each student was calculated. Then the item score was calculated for all the items of the students who earned sum > 7 (Calculations of the sum and item scores will appear in the next chapter). The groups with low IPA values were determined by counting the number of 40+ score values across the 12 items. If the number of such score values is less than 5 (the average is nine) the peer agreement of such group was questionable data of such group and would be discarded. The student who scored the highest score for any item

was considered as talented in that area compared to their peers (the group that a particular student belongs to should have good inter-peer agreement). In chapter 6 more details on data analysis are discussed.

5.2.6.4 Research Objective 4

To investigate the effectiveness of parents in identifying gifts and multi-talents, including intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers in primary Grade level students in Sri Lanka.

5.2.6.4.1 Sample for research Objective 4

Parents of all the students in the sample were the sample for data collection for Objective 4. The sample is illustrated in Table 5.1.

5.2.6.4.2 Data collecting instruments used for research Objective 4

The ‘Parent Inventory for Finding Potential (PIP)’ constructed by Rogers (2000) was the instrument used to gather information from parents. According to Rogers (2000, pp. 31) this instrument was constructed by examining the most recent research on gifted and talented students. Parents have to rate how often they observed the behaviours listed in the inventory. It has 4–points scale-rating inventory consisted of 51 items. Each item describes a possible gifted behaviour that could be present in a gifted child (See Appendix 5.8). These gifted behaviours indicate gifted characteristics fall into any one or a combination of five domains, namely; intellectual, academic, creative, social and artistic. The items that fall under each domain are illustrated in Appendix 5.9.

A mean score of 3.34 – 4.00 in any one of these areas indicates giftedness in the particular domain (area). Note that validity studies or factor analysis on this instrument are apparently not available in the published literature.

Reliability of the instrument: Firstly, the researcher translated the statements of the items of the PIP into the Sinhalese language. Then discussed the amended form with 5 parents, and with three master teachers and three class teachers of the primary Grades, modified some items by adding examples to clarifications in the statements of the items that parents had difficulty understanding (Appendix 5.8). Next the instrument was administered to a group of parents (20 in number) twice within two months. Most parents found similar characteristics in their children in both administrations (Discussed under the data analysis of the pilot test).

Validity of the instrument: Data were collected from achievements tests, IQ tests, PTSNs and PIP administrations. The triangulation of the data gathered from different sources should be able to provide the validity of the instrument to be used as an identification tool of gifted and talented students. The researcher expected disparities between parent ratings and other sources since the literature on identification reveals that different sources may nominate students differently. Since, validity of the PIP forms was expected to be identifying through the data triangulation towards the end of the main study, the researcher did not carried out any validity test during the study. However, if parent nominations show considerable disagreement with other sources repeatedly, then there is a doubt about the validity of parents' ratings.

5.2.6.4.3 Process of data collection for research Objective 4

Following the rapport building process, parents were called again for a meeting where PIP forms were. They were instructed how to fill in the rating scales. Parents were asked to observe the behaviours of their children for about two months and fill the forms. When the researcher did not receive the forms by the end of two months, she sent new forms to the parents as well as reminded them during the monthly parents meetings.

5.2.6.4.4 Procedures of data analysis for research Objective 4

The mean score of each domain was calculated by dividing the total of the rated value of items that falls into each domain by the number of items. For example,

$$\text{Mean score of Intellectual domain (MSI)} = \frac{\text{Total of rated values from items 1 – 22}}{22}$$

According to Rogers (2000), the mean score value of 3.34 – 4.00 of a certain domain indicated the giftedness in the particular domain.

5.2.6.5 Research Objective 5

To examine the extent to which above-level testing might be used to identify the gifted students who need further educational challenge beyond their Grade level, in primary Grade level schools in Sri Lanka.

5.2.6.5.1 Sample for research Objective 5

The purpose of this Objective was to diagnose whether the full potential of highly gifted students could be tested by above level testing. Therefore, the whole class was not included to the sample, but only the top 5% from the selected gifted sample (i.e.

from the gifted sample selected under research Objective 1) was included to the sample at this stage.

5.2.6.5.2 Data collecting instruments used for research Objective 5

As discussed in the literature review, for highly gifted students the tests designed for same age peers is not effective to diagnose their full potential due to the ceiling effect. The major approach to the correction of ceiling effect is to use off-level or above level testing (Feldhusen, 1991). For example, students of Grades 3–6 are tested by 8 Grade tests (Australian Primary Talent Search [APTS] conducted by Gifted Education Research Resource and Information Centre [GERRIC], Australia is an example for such tests). In Sri Lanka in primary education system Grade 3– Grade 5 students are following the same curriculum (Only the complexity of the subject matter increases). The Grade six curriculum is different from the primary Grade curriculum. Therefore, the researcher concluded that the highly gifted students of Grade four could be tested by Grade 5 test but not from the Grade six tests.

Therefore, the data collection instrument for research question 2 included 2 test papers constructed by including all the test items of a recent Grade five scholarship examination test paper of the Mathematics and Sinhalese subjects (Appendix 5.10). Since the scholarship examination is a standardised test, the researcher did not test the validity or reliability of the test items. However, there is a possibility some students may have seen the test items before the test as the test items were extracted from a past scholarship examination paper. But the researcher strongly believed, and also the year four teachers agreed that only the students who have a high level of academic talent on particular subjects could get high marks on the paper.

5.2.6.5.3 Procedures of data analysis for research Objective 5

Marks received by the students for the above level test were tabulated against the student numbers in descending order of the marks. The pass mark for the particular scholarship examination was 68. Therefore, if any of the students have scored above 65, then it would be concluded that above level testing could be used to identify students from primary Grades of Sri Lanka who need further educational challenges.

5.2.6.6 Research Objective 6

To propose an identification model appropriate to identifying gifted and talented students including intellectually gifted and academically talented primary Grade students in schools of Sri Lanka.

5.2.6.6.1 Sample for research Objective 6

The achievements of research Objective 6 depended upon the solutions or the results of the data analysis of research Objectives 1 – 5. In addition the researcher conducted 12 individual cases related to 12 students who had been identified as gifted higher achievers, moderately gifted, mildly gifted and gifted underachievers, including ‘invisible under-achievers’. In order to build these cases, information was collected from teachers and parents of these students, as well as from the students themselves. To enrich the cases the triangulation (data triangulation is discussed in this chapter under the section 5.2 – Research design) of collected test data, data collected through nomination forms and rating scales and information collected from selected students, their parents, class teachers and principals of the schools were used. Therefore, the sample for research Objective 5 consisted of,

12 students who possessed different level of giftedness; i.e. highly gifted, moderately gifted and gifted underachievers including ‘invisible underachievers. The following are the different categories of students selected.

Category A – students who are intellectually gifted & academically talented and also multi-talented.

Category B – Intellectually gifted and academically talented

Category C – Intellectually gifted and academically underachievers

Category D – Students identified as intellectually gifted by dynamic assessment (invisible gifted underachievers)

Since 12 cases were expected to be developed, students from each school were included in the sample as shown in the following table (Table 5.2). Finally, there were 14 case studies, as the researcher included 2 more students as requested by the teachers. Among the 14 students included in the case studies there were 3 students who scored high marks in above level testing too. Principals, Teachers and Parents of the above students were participants in the case study sample.

Table 5.2 Details of the student sample included in the case studies

| School | Category | No, of students |
|--------|----------|-----------------|
| J | A,B,C,D | 7 |
| K | A,D | 2 |
| L | A,D | 2 |
| M | A,D | 3 |

5.2.6.6.2 Data collecting instruments used for research Objective 6

Achievement of Objective 6 depends on the findings of the research Objective 1–5. The data were expected to identify to what extent the achievement tests, above level tests, teacher, peer and self nominations, parents ratings and nonverbal tests would help to identify the gifted students from primary Grades through Objectives 1– 5. Therefore, when producing a model to identify gifted and talented students from primary Grades in Sri Lanka there is the need to examine the results of the data analysis for each objective from Objectives 1–5. In addition, the researcher conducted 14 cases related to 14 students who have already identified as gifted higher achievers, moderately gifted and gifted underachievers including ‘invisible under-achievers’. Therefore, further to the results of Objectives 1– 5 information would be collected from selected 6– 8 students, teachers and parents of these students, primary heads and principals of the schools to build up these cases. Therefore, at this point semi-structured interviews were the main data collection procedure. The data collection instruments were a semi-structured interview guide. However, the researcher did not restrict the interview to the interview guide when collecting data but gathered as much data outside the schedule when necessary according to the case (Interview guide is indicated in Appendix 5.11).

5.2.6.6.3 Process of data collection for research Objective 6

There are three major methods of collecting research data in case studies: asking questions (and listening intently to the answers), observing events (and noting carefully what happens) and reading documents (Bassey, 1999). In developing cases for the final case study the researcher applied asking questions (interviews) as the data collection procedure.

Interviews: An interview is a purposeful conversation, usually between two people but sometimes involving more (Morgon, 1988) that is directed by one in order to get information from the other. In the hands of the qualitative researcher, the interview takes on a shape of its own (Burgess, 1984; Fontana & Frey, 1994). Interviews may be used in two ways in quantitative research. The interview may be as the dominant strategy of data collection, or may be employed in conjunction with participant observation, document analysis, or other techniques (Bogdan & Biklen, 1998). In developing the final case study in this research, interviews were carried out. Since the

methodology of the study is mixed methodology, the interview data were combined with quantitative data when constructing the case study. Interviews were carried out with the students, parents of the students, teachers, principals, primary heads and students, and would be conducted individually.

Interviews can be unstructured (open-ended interviews), semi-structured, and structured. Structured or fixed-response interviews are those that restrict the domains of relevance of the talk to a predetermined set of questions and thus, by inference a set of possible answers. Any information outside the domain of relevance is not sought, not recorded, and/or not taken into the account in the analysis of data.

On the other hand, open-ended interviewing takes the form of a conversation between informant and researcher. It focuses, in an unstructured way, on the informants' perception of themselves, of their environment and their experiences. Instead of standard list of questions, the free-flowing conversation relies heavily on the quality of the social interaction between the investigator and informant that can be faintly redirected by the interviewer if it should stray too far off the track of the research study. The researcher does not know how many sessions are going to be needed or what their length will be. As these matters will depend on the verbosity of the informant, their willingness to talk and the value of what they are saying (Burns, 2000).

Semi-structured interviews begin with a predetermined set of questions, but allow some latitude in the breadth of relevance. To some extent, what is taken to be relevant to the interviewee is pursued. The talk would be then tabulated or transcribed in full and the researcher may decide what to analyze in depth, depending on the patterns and themes that emerge (Freebody, 2003). Rather than having a specific interview schedule or none at all, an interview guide may be developed for some parts of the study in which a direction is given to the interview so that the content focuses on the crucial issues of the study (Burns, 2000).

In the current study, the researcher conducted semi-structured interviews (interview guides are attached as Appendix 5.12). This permits greater flexibility than close-ended interviews and permits a more valid response from the informant's perception of reality (Burns, 2000).

Interviews inevitably have a sense of formality. The social skills of the interviewer in relating sensitivity to the respondent and her cognitive skills in discovering what the

interviewee thinks are all important. Since the researcher involved in this study is a university academic, her previous experience involving data gathering by interviews helped build her social skills, sensitivity towards the respondents and understanding the respondents' perspective (Bassey, 1999). Interview with a tape recorder is common today. However, there may be some interviewees, who prefer the researcher to take down notes rather than record (Bassey, 1999). Thus, during the interviews the researcher was able to tape record some interviewees but annotated on other occasions, as preferred by the interviewee, if there were noisy surroundings.

Conducting Interviews: Students were selected for the sample as indicated under the section 'sample for research Objective 6'. The researcher discussed the purpose of the interviews with the class teachers and received permission to conduct them within the school (principals' consent was obtained at the beginning of the research).

In School J the class teachers helped the researcher to inform the parents about the interviews. The researcher was provided with the same room in which she conducted the IQ tests. The interviews were done individually. Rapport with the researcher was already established so parents showed keen interest in being interviewed. The researcher was able to tape record the interviews. The 7 students were also interviewed in the next day and the 4 class teachers too were interviewed during the following two days. The school principal was interviewed on another day. Only the parent interviews were tape-recorded.

In School K, since most of the parents come to the school daily with their children, the class teacher was able to inform the parents about the interview date. The researcher was given the same room used for the IQ testing to conduct the interviews. Parents did not hesitate to speak about their children and provided any other information the researcher desired. The interviews were tape-recorded. The principal, students and the class teacher were interviewed in the next day.

School L had a similar environment to School K and the class teacher was able to organise a date for the interviews. Parents readily gave information to the researcher during the interviews. The following day the students and the class teacher were interviewed and the principal was interviewed on the next day.

Interviewing parents was a difficult task in School M. Since most of the parents seldom visited the school the two class teachers had difficulty contacting them. They were informed through their children but only two parents came to the school on the

interview date. Since the school was noisy, the researcher was not able to tape record the interviews. Also, one parent came with his baby so it was difficult to tape record as the child started to cry. The researcher obtained the addresses from the class teacher and visited the homes of the other parents. The researcher found most of the mothers have little support and there was nobody to look after their infants when they leave their homes. One mother was a working mother, so the researcher left her telephone number and a written message with a neighbour asking for a convenient date for the interview. The parent contacted the researcher over the phone and a date was decided. The researcher visited the home again and conducted the interview. About a week after the parent's interviews the researcher interviewed the class teachers, students and the principal of the school (Data collected during the interviews are included in Appendix 6.15). The researcher planned to carry out about 20 interviews. However, it was possible to carry out only sixteen interviews.

5.2.6.6.4 Procedures of data analysis for research Objective 6

Data collected under research Objectives 1 – 4 were taken on to one sheet so that each student's achievement test data, RSPM test data, self, peer and teacher nomination data, and data collected from parents appeared in the same row. Data were not mathematically processed, but the data of each identification method of each student were examined separately to identify the giftedness of each student (especially the academic giftedness). Sometimes a student may be identified as gifted by peer nominations but not by achievement marks. Therefore, interviews from the case studies and the different data collected for Objectives 1 – 4 were triangulated for Objective 6.

Chapter 6

Analysis of Data

CHAPTER 6: ANALYSIS OF DATA

This chapter provides the details of the data, and the analysis of data of the present study. Data, and analysis of data for each objective, are presented separately.

6.1 Presentation and Analysis of Data Collected for Objective 1

Research Objective 1

To identify the effectiveness of achievement test scores (class test marks) in identifying intellectually gifted and academically talented students including gifted underachievers and invisible underachievers from Primary Grade level schools in Sri Lanka.

The achievement tests marks (in descending order) of the subjects Mathematics and Sinhalese language, of each student of each grade in all the schools of the sample is illustrated in Appendix 6.1.

Table 6.1 No. of students (in all schools) academically talented according to the achievement test marks of subject - Mathematics

| *SIN | •Maths Marks | SIN | Maths Marks | SIN | Maths Marks | SIN | Maths Marks | SIN | Maths Marks |
|-------|--------------|------|-------------|------|-------------|------|-------------|--------------|-------------|
| JA 43 | 99 | JC24 | 82 | JE32 | 84 | JH27 | 88 | MA29 | 82 |
| JA 9 | 93 | JC31 | 89 | JE27 | 83 | JH28 | 92 | MB11 | 85 |
| JA 44 | 88 | JD9 | 91 | JF27 | 92 | JH26 | 84 | MB21 | 86 |
| JA 25 | 86 | JD36 | 86 | JF33 | 89 | JH38 | 83 | KA15 | 98 |
| JA 30 | 85 | JD34 | 82 | JF24 | 86 | JH10 | 83 | KA18 | 97 |
| JB41 | 93 | JE17 | 98 | JF26 | 83 | JH39 | 83 | LA9 | 93 |
| JB26 | 90 | JE30 | 94 | JG25 | 90 | JH40 | 83 | LA18 | 84 |
| JB36 | 86 | JE11 | 91 | JG15 | 88 | MA2 | 83 | | |
| JC19 | 99 | JE16 | 87 | JG2 | 85 | MA6 | 85 | | |
| JC28 | 92 | JE24 | 85 | JH12 | 90 | MA26 | 93 | Total | 47 |

*SIN – Student Identification Number

•Maths – Mathematics Marks (as %)

The conceptual framework that contributes to the present study is Gagné's Differentiated Model of Giftedness. As understood by Gagné's definition, the top 10

percent of each academic area was included into the gifted group. Students that could be included in the top 10 percent of the sample of each subject are illustrated in the Tables 6.1 and 6.2 (Students that belong to this percentile group in Mathematics and in Sinhalese were selected from the lists appearing in Appendix 6.1, displayed as Tables 6.1 and 6.2 respectively). Since the children of the four schools had sat for four different achievement tests, in selecting the gifted group, the top 10 percent of each school was selected separately.

Table 6.2 No. of students (in all schools) academically talented according to the achievement test marks of subject - Sinhalese language

| *SIN | •Sin.l Marks | SIN | Sin.l Marks | SIN | Sin.l Marks | ISN | Sin.l Marks | SIN | Sin.l Marks |
|-------|-----------------|-------|----------------|------|----------------|------|----------------|--------------|----------------|
| JA 11 | 91 | JA 44 | 90 | JD36 | 90 | JG2 | 95 | LA6 | 80 |
| JA 16 | 83 | JA49 | 83 | JD46 | 82 | JG25 | 96 | LA9 | 90 |
| JA 17 | 81 | JB26 | 94 | JD9 | 97 | JG38 | 83 | MA29 | 92 |
| JA 25 | 83 | JB29 | 89 | JE11 | 86 | JH16 | 82 | MA34 | 65 |
| JA 30 | 82 | JB36 | 86 | JE30 | 85 | JH27 | 85 | MA6 | 72 |
| JA 36 | 85 | JB40 | 86 | JE32 | 94 | JH28 | 93 | MB11 | 77 |
| JA 37 | 84 | JB41 | 83 | JE34 | 86 | JH40 | 81 | MB12 | 65 |
| JA 38 | 87 | JC19 | 88 | JF26 | 83 | KA15 | 100 | MB21 | 75 |
| JA 39 | 86 | JC28 | 90 | JF33 | 83 | KA18 | 100 | | |
| JA 43 | 98 | JD33 | 88 | JG1 | 83 | KA20 | 100 | Total | 48 |

*SIN – Student Identification Number •Sin – Sinhalese language (as %)

Of 475 students of the sample, 47 students were found to be in gifted / talented in the area of Mathematics and 48 students were found to be gifted / talented in the area of Sinhalese language.

The students who are gifted and talented in both subject areas or in either one of the subject areas were identified from Tables 6.1 and 6.2 and included in Table 6.3. On examining the data in Tables 6.1, 6.2, and 6.3, it could be observed only 21 students of School J tested as talented in both Mathematics and Sinhalese language, and 16 students tested as talented only in Mathematics and 16 students tested as talented in Sinhalese language only. Similarly, in School M, four students are talented in both subjects and, of the others, two are talented in Mathematics and two are talented in Sinhalese language. In School K, out of three talented students, two are talented in both subjects and one student is talented only in Sinhalese language.

Table 6.3 No. of students (in all schools) identified as academically talented according to the achievement test marks in class tests in either Mathematics or in Sinhalese language or in both

| Gifted in either Maths/Sin./both | |
|-------------------------------------|--------|-------------------------------------|--------|-------------------------------------|--------|-------------------------------------|-----------|
| SIN | Gender | SIN | Gender | SIN | Gender | SIN | Gender |
| JA 43 | G | JB41 | G | JE34 | G | JH39 | G |
| JA 9 | B | JC19 | B | JF24 | B | JH40 | G |
| JA 44 | G | JC24 | B | JF26 | G | MA2 | B |
| JA 25 | G | JC28 | G | JF27 | G | MA6 | B |
| JA 30 | G | JC31 | G | JF33 | G | MA26 | G |
| JA 11 | B | JD9 | B | JG1 | B | MA29 | G |
| JA 38 | G | JD33 | G | JG2 | B | MA34 | G |
| JA 39 | G | JD34 | G | JG15 | B | MB11 | B |
| JA 36 | G | JD36 | G | JG25 | B | MB12 | B |
| JA37 | G | JD46 | G | JG38 | G | MB21 | B |
| JA49 | G | JE11 | B | JH10 | B | KA15 | G |
| JA16 | B | JE16 | B | JH12 | B | KA18 | G |
| JA17 | B | JE17 | B | JH16 | B | KA20 | G |
| JB26 | B | JE24 | B | JH26 | G | LA6 | B |
| JB29 | G | JE27 | B | JH27 | G | LA9 | B |
| JB36 | G | JE30 | G | JH28 | G | LA18 | G |
| JB40 | G | JE32 | G | JH38 | G | Total | 67 |

*SIN - Student Identification Number

•Sin – Sinhalese language Marks

Of three talented students in School L, one student is talented in both subjects and two others are talented in Mathematics and Sinhalese language separately. Therefore, out of 475 students 67 are academically talented (Table 6.3). The percentage of 67 academically talented students in the sample of 475 is 14%.

It is apparent that when academic talents are considered as separate academic areas the total percentage of talented students could be more than 10 percent. The researcher believed this percentage could be more than this, if another academic area is considered in addition to Mathematics and Sinhalese language.

Of the 67 academically talented students, 39 are girls and 28 are boys. Because there were more boys than girls in the entire sample, these data show that in the primary education system in Sri Lanka more girls are achieving academically compared to boys. In more detail, in School J, out of 53 academically talented students, 32 are girls and only 21 are boys. In School M, five boys and three girls are academically talented. In School K, all three academically talented students are girls. In School L, of three academically talented students, two are boys.

6.2 Presentation and Analysis of Data Collected for Objective 2

Research Objective 2

To investigate the effectiveness of Raven's Standard Progressive Matrices (RSPM) test and dynamic testing, in identifying the intellectually gifted and academically talented students including gifted underachievers and invisible underachievers from primary Grade level schools in Sri Lanka.

The data collection for Objective 2 was carried out in two stages, with different samples. Therefore, the presentation and data analysis for each stage is carried out separately.

6.2.1 Presentation and Analysis of Data in Stage 1

At the first stage of data collection, the entire sample⁴ sat for the RSPM test. The RSPM test scores of the students in each class were tabulated separately against the student numbers. The score list appears in Appendix 6.2 as Tables A6.2.1 – A6.2.12. Again, the top 10 percent of the list were selected as intellectually gifted students. It was observed those who scored on or above 90th percentile band belonged to the top 10 percent (Percentile bands were calculated and are displayed in Appendix 6.2 Table A6.2.13). The top 10 percent of the students are displayed in the Table 6.4.

⁴ Total number of students in the entire sample was 450. That is, 349 students from School J, 63 from school M, 19 from school K and 19 from school L

Table 6.4 Illustration of Students included in the top 10 % (intellectually gifted students) based on the RSPM test

| SIN | *G | •Per. Band | SIN | G | Per. Band | SIN | G | Per. Band |
|------|----|---------------|------|---|--------------|--------------|-----------|--------------|
| JA9 | B | 98 | JA46 | G | 95 | JC27 | B | 90 |
| JA12 | B | 98 | JB32 | G | 95 | JC38 | G | 90 |
| JC31 | G | 98 | JC36 | G | 95 | JE26 | B | 90 |
| JD10 | B | 98 | JE17 | B | 95 | JE30 | G | 90 |
| JD9 | B | 98 | JD1 | B | 95 | JF14 | B | 90 |
| JH41 | G | 98 | JD11 | B | 95 | JF26 | G | 90 |
| JA2 | B | 98 | JD33 | G | 95 | JH27 | G | 90 |
| JC35 | G | 98 | JD36 | G | 95 | JH28 | G | 90 |
| JD46 | G | 98 | JF8 | B | 95 | MB21 | B | 98 |
| JB3 | B | 98 | JA11 | B | 90 | MB11 | B | 95 |
| JC2 | B | 98 | JB36 | G | 90 | MA9 | B | 90 |
| JF1 | B | 98 | JE45 | G | 90 | MB23 | B | 90 |
| JF3 | B | 98 | JD3 | B | 90 | KA15 | G | 98 |
| JA25 | B | 98 | JD21 | B | 90 | KA13 | G | 98 |
| JF21 | B | 98 | JD17 | B | 90 | LA21 | G | 95 |
| JF30 | G | 98 | JA22 | B | 90 | LA9 | B | 90 |
| JH38 | G | 98 | JB41 | G | 90 | | | |
| JA14 | B | 95 | JB43 | G | 90 | Total | 52 | |

*G – Gender • Per. Band - Percentile Band

According to the above Table 6.4, 52 students are in the top 10 % group. All of them are on or above 90th percentile band. Therefore, 52 students of the sample are intellectually gifted according to the RSPM scores. Of this number, 29 are boys and 23 are girls. In School J, there were 24 intellectually gifted boys and 20 gifted girls. In School M, there were 4 gifted students and all were boys, whereas in School K, both gifted students were girls. In School L, there was a gifted girl and a boy. Of 450 of the sample, 273 were boys and 177 were girls. Therefore, in the entire sample, 60% are boys and 39% are girls.⁵ When the percentages of girls and boys in the entire sample are compared

⁵ Boys - $273/450 \times 100 = 60.66\%$ Girls - $177/450 \times 100 = 39.33\%$

with percentages of the intellectually gifted sample, it shows the percentage of gifted girls (44%) to be a little higher than that of boys (56%)⁶.

Furthermore, to identify the gifted underachievers, the researcher compared the intellectually gifted students who belong to the group on or above 90th percentile band (i.e. in the top 10%) with the top 10% of the academically talented student group in the sample. The researcher assumed that if the intellectually gifted students had developed their academic talents to a level expected by their giftedness they should be found among the top 10% of the academic group of subjects Mathematics or Sinhalese language. The students who belong to these two groups are indicated in Tables 6.3 and 6.4. According to these two tables, out of 52 intellectually gifted students, only 20 are academically higher achievers or academically talented. Of these, 12 are girls and 8 are boys. Among the 32 underachievers (who do not show the achievement expected by their intellectual ability) 21 are boys and 11 are girls. This shows that of 67 academically talented students only 20 students showed intellectual giftedness.

However, it is understood from the literature on giftedness and talent that students may be gifted in a domain without being talented in a related field, and those who are high achieving or talented in a particular field may not necessarily be highly gifted in that domain (Gagné, 2003). The probable reasons for this phenomenon will be discussed in the next chapter.

6.2.2 Presentation and Analysis of Data in Stage 2

At this stage, a metacognitive intervention was carried out by following with a post-test (RSPM) and a far-post-test (RSPM). There are three sets of data at this stage (including the pre-test marks at stage 1; this is discussed in more detail under methodology - see Section 5.2.6, pp. 112). The pre-test marks (marks of stage 1), post-test marks and far-post-tests marks, of both experimental and control groups are displayed in three parallel columns indicating the corresponding percentile bands of each mark against student identification numbers (see Appendix 6.3).

It could be observed that there is a remarkable increase (marked by * in the Table A6.3.1) in percentile bands of post-tests and far-post-tests of many students in the

⁶ Boys - $29/52 \times 100 = 55.76\%$ Girls- $23/52 \times 100 = 44.23\%$

intervention group. However, such increase is not significant in the control group (Appendix 6.3, Table A6.3.2).

On examining the data in Appendix 6.3, it can be seen that there are significant differences between the percentile bands of pre-test and post-test and/or far-test of many students of the experimental group, compared to the students of the control group. Some students who were in the 25th percentile band in pre-test have reached on or above 98th or 95th percentile band (e.g. LA8, KA2, LA18) and some have reached on or above 85th percentile band in the post-test or far-test (e.g. students JA33, JB9, KA1). The students who had scored on or above 90th percentile band are marked by an asterisk (*) in the Table A6.3.1.

Student LA20 who was in 10th percentile band in pre-test scores has reached the 95th percentile band in the post-test and also reached the 90th percentile band again in the far-test. Many other students reached above the 85th percentile band in both post-test and far- test (e.g. students KA5, KA4, JB8). This shows that the intervention has caused a permanent difference in cognitive development in some of the students, as the far-post-test was administered six weeks after the post-test

Table 6.5 Number of students that reached 98th, 95th, and 90th percentile bands, and the total number of students belonging to the on or above 90th percentile band in experimental group after the intervention, in each school

| | Sch K- | Sch L- | Sch M- | Sch J | Total |
|--|----------|----------|----------|----------|-----------|
| Total students in the intervention group | 9 | 8 | 16 | 23 | 56 |
| Total students on or above 98 th percentile | 6 | 2 | 1 | 0 | 9 |
| Total students on or above 95 th percentile | | 1 | 1 | 4 | 6 |
| Total students on or above 90 th percentile | 1 | | 2 | 5 | 8 |
| Total of ≥ 90th percentile | 7 | 3 | 4 | 9 | 23 |

The Table 6.5 shows, the details of students that reached the percentile bands 98th, 95th and 90th (based on the RSPM results of either post-tests or far post-test).

Out of the total 56 students in the experimental group, four students (JA44, KA18, L9, MA29,) were already identified as gifted by achievement test marks (See Table 6.3). However, their RSPM scores were below the 90th percentile band, except in student L9. Therefore, in the experimental group, before the intervention there were four students, already identified as gifted.

Therefore number of students in the gifted range in the sample before intervention = 4

Percentage of gifted students before intervention = $4/56 \times 100 = 7.14 \%$

Number of students in gifted range after intervention = 23 (indicated in Table 6.6)

Percentage of gifted students after intervention = $23/56 \times 100 = 41 \%$

Thus, there is an increase of about 34% of students in the gifted range after the intervention. By including mildly gifted students in the gifted pool, this percentage will be increased further.

These findings further highlighted the effectiveness of the ‘Dynamic testing’ in identifying gifted students. In the control group, only four students showed difference in percentile bands. Of these, two students were already in the gifted range before intervention; of the other two, only one showed significant difference in percentile band. Therefore, the percentage increase in the control group was not calculated. There can be many reasons for the increase in scores in individuals in the control group. For example, it could be due to the reason that during the pre-test these students had experience with the test, and were familiar with the test items. Further, when the results (in Tables A6.3.1 and 6.3.2) were subjected to the ANOVA test (one- way analysis), it was observed that there is a significant difference in IQ scores in experimental group after the intervention (The control group only had a placebo intervention). Results of the pre-test, post-test and far-post test of both the experimental and control groups were examined by the ANOVA test separately.

6.2.2.1 Results of ANOVA test

Results of the ANOVA test are indicated in Appendix 6.4.(See Tables A6.4.1 & A6.4.2). Table A6.4.1 shows the mean values of the pre-test score of the experimental group and the control group (before intervention) is approximately equal. Also, the results on the ANOVA test indicate the significance level of pre-test is 0. 617 (Table A6.4.2 - under pre-test results), which is more than .05. This is to be interpreted that

there is no significance difference in pre-test values of both experimental and control groups. Therefore, the two groups are homogeneous regarding IQ before the intervention.

Table A6.4.2 (post-test results) shows that there is a significant increase in mean values of the post-test results of the experimental group compared to the control group. Also the significance level of post-test result at .005 (less than .05) indicates (Table A6.4.2 - under post-test results) that there is a significant difference between post-test IQ values. Also the high mean value of post-test marks of the experimental group shows that students of this group have reached to a higher cognitive level because of the intervention. The ANOVA test results of the far post-test, too, yield the same results (Tables A6.4.1 & A6.4.1 - under far post-test results).

The ANOVA test results too showed that there are significant differences in the post-test results and far-post-test results of the experimental group when compared with the same results of the control group. That is, dynamic testing could be used to identify academically gifted students whose cognitive abilities are not developed to the level of their giftedness. Those students belong to the group of invisible gifted underachievers.

6.3 Presentation and Analysis of Data Collected for Research Objective 3

Research Objective 3

To examine the effectiveness of employing Gagné's Peer, Teacher and Self-Nomination forms (PTSNFs) in identifying gifts and multi-talents, including intellectually gifted and academically talented students, including gifted underachievers and invisible underachievers, in primary Grade level schools in Sri Lanka.

The data were collected using Gagné's Peer, Teacher and Self-Nomination forms (PTSNFs), for research Objective 3 (See section 5.2.6).

6.3.1 Selection of Valid Responses

The nomination forms with fewer than 33% of the questions answered (that is, fewer than 12 answers out of 36 in each nomination form⁷), and the forms that showed a lack of understanding of the task especially concerning the abilities of peers, were

⁷ Each nomination form has 12 items, For each item there are 3 choices, therefore there are altogether 36 responses or answers.

regarded as invalid responses. Except for the above, the responses in all the other nomination forms were regarded as valid responses.

6.3.2 Data Sheets

Twenty-four separate data sheets were created for both nomination forms A and B for each class (Total number of classes = 12). In each data sheet, students' responses for each item were marked under Student Identification Numbers (SIN) against with the item numbers for all 12 items of Form A and Form B (the data sheets appear in Appendix 6.5 as Tables A6.5.1 to A6.5.24). Teacher nominations were also marked in a separate column at the right end of the each Table. Self-nominations were marked at the last row of the Table, against the SIN of each student.

Total number of 1st choices, total number of 2nd choices and total number of 3rd choices received for each item by each student were calculated⁸ separately for all the items in Form A and Form B of each class. The calculated totals are included in 24 data sheets (for both forms A and B of 12 classes). The 24 data sheets appear in Appendix 6.6 as Tables A6.6.1 to A6.6.24.

6.3.3 Calculations of Talent score

The item score (SUM or raw score) of each item in Form A and Form B of each student were calculated. To compare the item scores (SUMS) of individuals, of different classes, the item scores were then converted to a common scale: a percentage scale, known as a Talent score.

Talent score = $SUM/MAX \times 100$ (for each item)

SUM = No. of 1st choices x 3+ No. of 2nd choices x 2+ No. of 3rd choices x 1 (for each item)

MAX = No. of students in a group (class) x 3⁹

The calculated SUM and talent score of each item, of each student of each Grade appears in Appendix 6.6 as Tables A6.6.1 to A6.6.24 (for both forms A and B)

⁸ Researcher used the formula =COUNTIF(array,"SIN") in Microsoft Excel to calculate these totals.

⁹ No. of students is the number of students made valid responses to the nomination forms)

6.3.4 Score Sheets

Separate score sheets were created for Form A and Form B for all Grades. In each score sheet, 12 items (which are categorized into four sub-groups) of Form A or Form B are indicated. The sub-groups in Form A are the relevant ability domains: Intellectual/Academic, Mechanical-Technical, Drama and Socio-affective. The sub-groups in Form B are: Physical abilities, Arts (music), Arts (visual), and Interpersonal abilities.

In a score sheet, the talent score of each student for each item is marked against the student identification number. The number of self-nominations by each student is also marked in the appropriate column. Teacher nominations were marked in the appropriate box of the score sheet by (*) in front of the respective student. Altogether, 24 such score sheets were completed for 12 classes for nomination forms A and B. The score sheets appear in Appendix 6.7 as Tables A6.7.1 to A6.7.24.

6.3.5 Computing Sub-Group Scores

Only the sub-groups with at least one 15+ talent score, or two 10+ talent scores, were considered when computing sub-group scores (Gagné, 1999), since in other cases with lower values the average would be too low to have any significance.

Before computing the sub-group scores, missing talent scores of each sub group were filled. The sub-group score was then calculated by adding talent scores of items that belong to each subgroup, and the total was divided by the number of items in the particular subgroup, and rounded off to the nearest integer. This procedure gave the mean score or the sub-group score. The four highest talent scores and the four highest sub-group scores were marked in the same sheet. Therefore, the final score sheet (Tables A6.7.1 to A6.7.24 of Appendix 6.7) of each class consisted of: self-nominations, teacher nominations, talent scores (top four scores highlighted) and sub-group scores (top four scores highlighted).

6.3.6 Inter Peer Agreement (IPA)

IPA is one form of reliability. Without higher agreement, the nominations would be worthless, as one could not decide on the correct judgment when different judges (peers) gave different choices (Gagné, 1999). If the number of items that scored 40 or more than 40 is fewer than 4 (average is nine) then the IPA value of a group was considered to be low, and the judgment of such groups could not be considered as valid

judgments (Gagné, 1999). Of 24 score sheets of the sample, Form A of Grade J4, had only three 40+ talent scores. Therefore, this group was considered as a group with low IPA in particular areas of measurement. However, Form A of Grade J4F had seven 30+ values and one score of 65. Therefore, the data were included in the analysis.

6.3.7 Analysis of Data

Finally, the researcher used the data included in the score sheets (Tables A6.7.1 to A6.7.24 of Appendix 6.7) for the data analysis. The data of each school were analysed separately. The researcher examined the following areas during the data analysis.

1. Nomination patterns

To identify the nomination patterns, the researcher carried out the following analysis,

- i. During the data analysis, the 1st, 2nd, 3rd and 4th students in a particular ability domain (subgroup) were identified (already marked in the Tables A6.7.1 to A6.7.24).
 - ii. The following details of peer nominations received for each item by each of the first four students were examined.
 - The rank of the nomination received by each student for each item (marked in the Tables A6.7,1 to A6.7.24).
 - The value of the item score (whether a high, moderate or low score).
 - Whether these items had received teacher nominations.
 - iii. The researcher identified the students who have received high scores in individual items (who are not among the top four students), and whether they have received teacher nominations.
 - iv. The researcher identified the students who received teacher nominations for items with poor or zero nominations by peers.
2. The relationship between the teacher and peer nomination
 3. Teacher capabilities in identifying gifts/talents in individual domains in the PTSNforms.
 4. Teacher capabilities in identifying talents in individual areas of ‘Academic’ Domain.
 5. Gender orientation in peer and teacher nominations.

6. Gender orientation of nominating to academic domain
7. Score distribution among the items of academic domain
8. Inter-peer agreement in peer nominations

Detailed presentation of data of each Grade (belonging to both nomination Form A and Form B) appears in Appendix 6.8.

6.3.7.1 Nomination patterns observed during data analysis

Several patterns of agreement could be identified when examining the analysed data in Appendix 6.7, and Appendix 6.8. The following situations are the patterns identified by the researcher during the data analysis.

1. Students have peer agreement with highest item scores and subgroup scores, with or without complete teacher peer agreement. For example, nominations received by Students KA18, KA15 and KA20. Students KA18 and KA15 have received peer- nominations for all the 4 items in academic sub-group. Teacher has also offered nominations for all the four items of both students. Student KA20 has received peer- nominations for all four items, but received only two teacher-nominations. Similarly, student LA14 has received 3rd nominations for both items in drama category by peers, but not received any teacher-nominations.
2. Students have not reached the top four positions by sub-group score of a particular sub-group but have received 1st, 2nd or 3rd nominations for one or two items (with high or moderate score)¹⁰ of the sub-group, but not received teacher-nominations. For example, Student KA7 has received 2nd nomination for item ‘Comedian’ in the Drama sub-group. Nevertheless he has not scored high marks for the sub-group as he has scored zero for the other item of the Drama sub-group. Similarly, Student JH12 has received 1st nomination for item ‘Hercules’ in the Physical sub-group; however he has received zero peer-nominations for other items in the sub-group. Therefore, he is not in the first four positions in sub-group score.

¹⁰ Item scores and talents scores are appear in Tables A6.7.1 to A6.7.24 under appendix 6.7

3. Students have the same rating as in situation 2 above, but received teacher-nominations too for these items (e.g. Student MB19 has received the 1st nomination for item ‘Musician’ in the Music domain, but not in top four positions in sub-group score. Similarly, Student JF40 has received 1st nomination for item ‘Leader’ in the Interpersonal sub-group, but not in the top four positions in sub-group score.
4. Students have not been nominated among the top four students by sub-group score, but offered 1st, 2nd or 3rd nominations in one or two talent items in sub-groups as in situation 2, but have not received considerably high scores for respective items. No teacher-nominations were received for the items. For example, student JC3 received 3rd nominations for items ‘Scientists’ and ‘Bright idea’ in the Academic sub-group, but his item scores are 14 and 13 respectively¹¹. Similarly, Student JA23 has received 2nd nomination for item ‘Comedian’ in the Drama sub-group. However, the item score is only 17¹².
5. Students have not been nominated among top four students by sub-group score (as in situation 4) but received teacher-nominations too for the peer-nominated items. For example, Student JC7 has received 3rd nomination for item ‘Hercules’ in physical sub-group. The item score is 17¹³, however, he has received the teacher-nomination too. Similarly, Student JB5, for item ‘Musician’ of the Music sub-group has received 3rd peer nomination. The item score is 9¹⁴. He also received teacher-nomination.
6. Students have received zero nominations for a particular item by peers, but received teacher-nomination. Student LA18 has received teacher-nomination for item ‘Actor’ in the Drama category, but no nominations from peers. Similarly, Student JH16 has received teacher-nomination for item ‘Handy man’ in the Mechanical –technical subgroup, but no nominations by peers.
7. Some students are in one of the top four positions in sub-group score, but the sub-group scores are low. For example, Student LA6 received 3rd place in

¹¹ Item scores appear in Table A6.7.3

¹² Item scores appear in Table A6.7.1

¹³ Item scores appear in Table A6.7.15

¹⁴ Item scores appear in Table A6.7.14

sub-group Mechanical –technical, but the sub-group score is 16¹⁵. Similarly, Student MB27 is 3rd in sub-group academic, but the sub-group score is 19¹⁶.

In situation 1, there is no doubt about the talents of the nominated Students. In situation 2, since the peers made the decision (because many judges are involved) and scores too are moderately high, there could no doubt about the talents. In situation 3, since the teacher has given an additional judgment, there is no doubt about the talents. In situation 7, it was observed that these students are in top four positions because of high marks gained for one or two items of the respective domain. In such instances, the overall giftedness in the domain is doubtful, but the talent in the respective area could be taken into consideration.

Of the other three situations, situation 6 is very doubtful since it is a nomination by single person, the teacher. In situation 4, since the agreement of peers is low, it is doubtful that talents are present in nominated individuals. In situation 5, even though the teacher too has agreed, since the peer agreement is low it is not possible to draw any conclusions. Nevertheless, there could be several reasons for such situations (the researcher cannot find out the reasons for this situation – a separate study would need to be carried out for that). Therefore, the researcher infers that such situations could give a hint of the presence of undeveloped talents or hidden gifts in the respective areas of talents in these students. Therefore, the researcher proposes there could be gifted under-achievers in domains other than the intellectual domain.

6.3.7.2 Relationship with teacher and peer nominations

During the above data analysis, the teacher-nominations were compared with first four peer-nominations. Nevertheless, this rating is little different when the teacher-nominations are compared with first three peer-nominations. Appendix 6.10 shows details of the ratios of teacher-nominations to peer-nominations received by each domain (sub-group), when considering the first three peer-nominations.

Appendix 6.11 shows the details of the ratio of teacher-nominations to peer-nominations, expressed as a percentage, received by each domain (subgroup), when considering the first four peer-nominations. The Table 6.6 illustrates the summary of data in Appendices 6.10

¹⁵ Item scores appear in Table A6.7.12

¹⁶ Item scores appear in Table A6.7.2

Table 6.6 Percentages of teacher nominations that agree with the first three peer nominations and 1st four peer nominations received by the students of schools J, K, M, and L for each domain of giftedness

| Domains of Giftedness | School J | | School M | | School L | | School K | |
|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | First 3 peer *nomins. | First 4 peer nomins. | First 3 peer nomins. | First 4 peer nomins. | First 3 peer nomins. | First 4 peer nomins. | First 3 peer nomins. | First 4 peer nomins. |
| Academic | 51.04 | 57.29 | 75 | 79.16 | 50 | 58.33 | 91.6 | 100 |
| •Mech-Tech | 36.11 | 51.38 | 55.55 | 61.11 | 77.77 | 77.77 | 44.44 | 55.55 |
| Drama | 39.58 | 47.91 | 58.33 | 58.33 | 50 | 66.66 | 50 | 83.33 |
| Socio-affective | 37.5 | 43.05 | 61.11 | 72.22 | 55.55 | 66.66 | 66.66 | 77.77 |
| Physical | 29.16 | 31.94 | 61.11 | 61.11 | 55.55 | 77.77 | 66.66 | 66.66 |
| Music | 50 | 54.16 | 72.22 | 72.22 | 66.66 | 88.88 | 55.55 | 77.77 |
| Visual | 37.5 | 41.66 | 58.33 | 66.66 | 66.66 | 66.66 | 83.33 | 83.333 |
| Inter-personal | 54.16 | 60.41 | 66.66 | 70.83 | 66.66 | 75 | 75 | 83.33 |

*nomins – nominations

•Mech-Tech – Mechanical technical

According to the data in the Table 6.6, when the teacher-nominations are compared with first four peer-nominations or first three peer-nominations, in School M there is no difference in the percentages of teacher-nominations that matched with the peer-nominations in the physical, drama and musical domains. The same is found in School L in the Mechanical-technical domain and the Visual domain and in the Visual and Physical domains of School K.

However, in all the other instances, the percentage of teacher-nominations that compared with peer-nominations is higher when the teacher-nominations are compared with the first four nominations of peers than the 1st three nominations of the peers.

For School J, it is true for all the domains. The reason for this could be seen by careful examination of the data in the Tables A6.7.1 to A6.7.24 (See also Appendixes 6.7). These data indicate that, in several instances, the teachers were capable of nominating two students whom the peers too nominated. The teachers are not capable of nominating the 3rd student to match with the peer nominations (Teachers were

asked to nominate the three best students). Sometimes the student who had been nominated to the fourth place by their peers for the particular item received the third teacher-nomination.

For example, in School M, Grade four A students MA10 and MA2 are the 1st and 2nd nominations of peers to item 'Encyclopedia'. The teacher too has nominated these two students. The teacher's other nomination is given to student MA29. She is the 4th nomination of peers. The peers 3rd nomination was student MA26. The teacher has failed to nominate that student (Table A6.7.9). Similarly, in School J, Grade four B for the item 'Actor' teacher has nominated students JB35 and JB29. These two students are peers' 1st and 3rd nominations. In this instance, the teacher has failed to offer her other nomination even to 4th nomination of peers, but she has offered it to a student who has received zero nomination by peers (Table A6.7.2). By careful observation of Tables, A6.9.1 to A 6.9.12, in which peer nomination and teacher nominations are clearly marked, these situations could be identified.

When comparing the nomination patterns of the four schools, in School J, the teacher nomination percentages¹⁷ are low, compared to other schools. The possible reason for this may be the number of students in the classes of School J. The classes of School J have 45 to 49 students in a class. Whereas Schools K and L have only 20 and 22 and School M has only 36 and 37 in the two classes.

6.3.7.3 Teacher capabilities of identifying gifts/talents in different ability domains

When examining the Table 6.7, the common feature is that all the teachers are capable of identifying Interpersonal talents in one of 1st, 2nd or 3rd places. In general, most of the teachers of School J are identifying interpersonal abilities first. The other two abilities that teachers identify easily are academic and music abilities.

Teachers of schools M and K show the highest capability of identifying academic abilities. School J is second highest in identifying academic abilities. However, the teachers of School L show low capability of identifying academic abilities compared to the teachers of other three schools. Except in School L, all the teachers of other schools show low capability of identifying mechanical-technical abilities of their

¹⁷ Here the percentage means, the percentages of teacher nominations that matched with first three peer nominations

students compared to peers' ability of identifying this talent. However, in general, different schools in the sample show different capabilities on identifying the different ability domains. Therefore, the researcher cannot do many generalizations on this. There can be many reasons for this situation, such as the environment of the school, class and children, the abilities that are mostly valued by the schools. Since a separate research should be conducted to identify such factors, the researcher is not discussing them more details.

Table 6.7 Descending order of teacher nomination percentages match with first 3 peer nominations

| School J | | School M | | School L | | School K | |
|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| Domain | % | Domain | % | Domain | % | Domain | % |
| Inter-per | 54.16 | Academic | 75 | Mech-Tech | 77.77 | Academic | 91.6 |
| Academic | 51.04 | Music | 72.22 | Music | 66.66 | Visual | 83.33 |
| Music | 50 | Inter-per | 66.66 | Inter-per | 66.66 | Inter-per | 75 |
| Drama | 39.58 | Socio-aff | 61.11 | Visual | 66.66 | Socio-aff | 66.66 |
| Socio-aff | 37.5 | Physical | 61.11 | Socio-aff | 55.55 | Physical | 66.66 |
| Visual | 37.5 | Drama | 58.33 | Physical | 55.55 | Music | 55.55 |
| Mech-Tech | 36.11 | Visual | 58.33 | Academic | 50 | Drama | 50 |
| Physical | 29.16 | Mech-Tech | 55.55 | Drama | 50 | Mech-Tech | 44.44 |

The percentages of teacher nominations of eight ability domains (that match with the first three peer nominations, appeared in Table 6.6 above) of each school. The teacher nomination percentages (match with first three peer nomination) arranged in the descending order of the percentages (Table 6.7 above).

Further, by using the data in Appendix 6.10, the teacher-peer nominating ratios of each domain of all the schools considered together and a common percentage of teacher nominations to the entire sample is calculated for each domain. These values appear in the Table 6.8.

Table 6.8 Teacher-peer nomination ratio of each domain of the entire sample
(in all the Grades of School J, K, L & M)

| Sch/Grade | Acad | Mech- Tech | Drama | Socio- aff | Physical | Music | Visual | Inter- per |
|---|---------------|---------------|--------------|---------------|---------------|---------------|--------------|---------------|
| J4A | 6/12 | 5/9 | 3/6 | 2/9 | 4/9 | 5/9 | 2/6 | 7/12 |
| J4B | 7/12 | 4/9 | 3/6 | 3/9 | 2/9 | 7/9 | 2/6 | 7/12 |
| J4C | 7/12 | 1/9 | 1/6 | 2/9 | 3/9 | 4/9 | 1/6 | 6/12 |
| J4D | 9/12 | 2/9 | 3/6 | 6/9 | 4/9 | 8/9 | 3/6 | 8/12 |
| J4E | 5/12 | 2/9 | 3/6 | 5/9 | 3/9 | 2/9 | 4/6 | 6/12 |
| J4F | 4/12 | 5/9 | 2/6 | 2/9 | 1/9 | 5/9 | 3/6 | 6/12 |
| J4G | 7/12 | 4/9 | 4/6 | 5/9 | 4/9 | 5/9 | 3/6 | 8/12 |
| J4H | 4/12 | 3/9 | 0/6 | 2/9 | 0/9 | 0/9 | 0/6 | 4/12 |
| MA | 9/12 | 5/9 | 3/6 | 6/9 | 5/9 | 7/9 | 4/6 | 8/12 |
| MB | 9/12 | 5/9 | 4/6 | 5/9 | 6/9 | 6/9 | 3/6 | 8/12 |
| K4A | 11/12 | 4/9 | 3/6 | 6/9 | 6/9 | 5/9 | 5/6 | 9/12 |
| L4A | 6/12 | 7/9 | 3/6 | 5/9 | 5/9 | 6/9 | 4/6 | 8/12 |
| Total | 84/144 | 47/108 | 32/72 | 49/108 | 43/108 | 60/108 | 34/72 | 85/144 |
| % of teacher nominations | 58.33 | 43.51 | 43.51 | 45.37 | 39.81 | 55.55 | 47.22 | 59.02 |

The last row of the Table 6.8 demonstrates the overall matching percentage of teacher- nomination with peer-nominations of identifying the presence of gifts/talents in individuals of the sample concerning the appropriate domain. According to the above data, the order of teachers' capabilities of nominating students for each domain (by the entire sample) that match with peer nomination is as follows:

Interpersonal > Academic > Music > Visual > Socio-affective > Mechanical-
Technical and Drama > Physical

The above percentages show that teachers have more than average capabilities in identifying abilities in domains of interpersonal, academic and music. In addition, teachers appear to have abilities a little below average to identify students' abilities in the domains of visual, socio-affective and mechanical and technical and drama.

Teachers appear to have the least ability to identify talents in the physical domain.

6.3.7.3 *Teacher capabilities of identifying talents in individual areas of ‘Academic’ Domain*

Table 6.9 Teacher-peer nomination ratio of each item of academic domain of the entire sample of all the Grades of School J, K, L & M

| Grades of Schools J, M, K, & L | Academic Domain | | | |
|-----------------------------------|-----------------|--------------|--------------|--------------|
| | Encyclopaedia | Lightning | Scientist | Bright idea |
| J4A | 2/3 | 2/3 | 1/3 | 1/3 |
| J4B | 2/3 | 3/3 | 1/3 | 1/3 |
| J4C | 3/3 | 3/3 | 1/3 | 0/3 |
| J4D | 3/3 | 2/3 | 2/3 | 2/3 |
| J4E | 1/3 | 2/3 | 1/3 | 1/3 |
| J4F | 1/3 | 2/3 | 1/3 | 0/3 |
| J4G | 2/3 | 2/3 | 2/3 | 1/3 |
| J4H | 0/3 | 2/3 | 0/3 | 2/3 |
| K4A | 3/3 | 3/3 | 3/3 | 2/3 |
| L4A | 2/3 | 1/3 | 1/3 | 2/3 |
| M4A | 2/3 | 2/3 | 3/3 | 2/3 |
| M4B | 2/3 | 1/3 | 3/3 | 3/3 |
| Total(teacher /peer) | 23/36 | 25/36 | 19/36 | 17/36 |

Since in this study, special emphasis is given to identifying academically gifted students, the researcher examined the teacher capabilities of identifying the talents in specific items in academic domain. Data in the Table 6.9 shows that over all 25 teacher-nominations are compared with 36 peer-nominations for item ‘Lightning’ is the highest number of teacher-nominations that matched with peer-nominations received by items of the academic domain. This indicates that considerable numbers of teachers are capable of identifying the talents in the area of ‘Lightning’ out of four talent areas. Therefore, according to the above data, the order of teachers’ capability of nominating students that match with peer nomination is as follows:

Lightning > Encyclopedia > Scientist > Bright idea (items in Intellectual/Academic area)

This situation is similar to the situation in the study by Cardinal (cited in Gagné, 1999, p 64) that identified by teacher-peer correlation coefficients. Relevant to the academic domain, overall 84 teacher-nominations matched with 144 peer-nominations in this study, that is, about 58%. This shows that the teachers possess

little more than an average capability of identifying abilities of academic domains that have identified by peers too. This is the second highest ability that teachers are able to identify.

6.3.7.3.1 Gender orientation of abilities in peer- and teacher-nominations

Table 6.10 Illustration of percentage of peer- and teacher-nominations* by gender (including the whole sample) in each ability domain

| Ability Domains | Percentages of peer and teacher nominations by gender | | | |
|----------------------|---|-------|---------------------|-------|
| | Peer-nomination | | Teacher-nomination* | |
| | Boys | Girls | Boys | Girls |
| Academic | 58.44 | 41.55 | 52.94 | 48.52 |
| Mechanical-Technical | 86.77 | 13 | 90.72 | 9.78 |
| Drama | 62.55 | 37.50 | 61.64 | 38.35 |
| Socio-affective | 50.83 | 49.16 | 43 | 57 |
| Physical | 82.75 | 17.24 | 83.83 | 16.16 |
| Music | 32.45 | 67.54 | 33.65 | 66.35 |
| Visual | 64 | 36 | 55.55 | 44.44 |
| Inter-personal | 51.65 | 48.34 | 52.11 | 47.88 |

* Nominations for items of each domain were counted.

- Here all the 3 teacher nominations for each item were counted (whether they match with peer-nomination or not)

The above Table (data extracted from Appendix 6.12) gives the percentages of girls and boys nominated to individual domains (or to item/items of the domains) by peers and by the teacher. Peer-nomination data show that in ‘Mechanical-technical’ and ‘Physical’ abilities, there is a significant different in gender. Nearly more than 85 per cent of nominations have been offered to boys. However, this pattern could be observed in the teacher-nominations too (approximately in the same percentage). Therefore, gender differences may represent the real situations of the sample. Further, this situation is same for the domain of ‘Drama’. Boys have received 60 per cent of nominations. Teacher-nominations too followed the same pattern. Nearly, 70 per cent of nominations for the Music domain have been offered to girls. The teacher-nomination pattern is similar to the peer-nomination pattern in the Music domain too. Gagné (1993), highlighted a similar situation and has concluded that these gender

ratios represent the real differences in the abilities manifested by boys and girls in the school environment.

6.3.7.3.2 Gender orientation of nominating to academic domain

The main focus of the study is academic and intellectual giftedness. Therefore, more details on gender orientation in nominating for academic domain are presented in the Table 6.12.

In the entire sample, there are more boys than girls. Except in Grade K4A, in all the other classes, this situation is present. However, even though the majority are boys, by examining the percentages of peer-nominations, it is clear that boys were not biased in nominating boys. That is, the peer-nomination percentages of girls and boys are approximately similar to the percentages of the entire sample.

Further, when considering teacher-nomination percentages, the teacher-nomination percentage for girls is a little higher when compared with the percentages of the girls in the entire sample and the percentage of peer-nominations. Nevertheless, the teacher-nomination percentage of boys is a little lower when compared with the peer-nomination percentages and the percentage of boys in the entire sample.

Table 6.11 Comparison of percentages of boys and girls of the entire sample, with the Percentages of peer and teacher nomination in academic domain

| Totals and percentages of boys and girls of the entire sample | | | Peer nominations in academic domain | | Teacher nomination in academic domain | |
|---|--------------|--------------|-------------------------------------|--------------|---------------------------------------|--------------|
| Grades | Boys | Girls | Boys | Girls | Boys | Girls |
| J4A | 27 | 22 | 9 | 3 | 4 | 8 |
| J4B | 26 | 20 | 6 | 6 | 5 | 7 |
| J4C | 27 | 21 | 6 | 8 | 6 | 5 |
| J4D | 27 | 20 | 7 | 5 | 8 | 4 |
| J4E | 29 | 19 | 7 | 5 | 3 | 9 |
| J4F | 25 | 21 | 8 | 6 | 6 | 4 |
| J4G | 27 | 18 | 13 | 0 | 10 | 2 |
| J4H | 25 | 18 | 5 | 8 | 3 | 6 |
| M4A | 24 | 13 | 7 | 6 | 6 | 6 |
| M4B | 24 | 12 | 11 | 2 | 10 | 2 |
| K4A | 10 | 12 | 2 | 12 | 2 | 10 |
| L4A | 14 | 7 | 9 | 3 | 9 | 3 |
| Total | 285 | 203 | 90 | 64 | 72 | 66 |
| Percentage | 58.40 | 41.59 | 58.44 | 41.55 | 52.94 | 48.52 |

Therefore, in the situations where there is a bias towards nominating more boys (when there are more boys than girls in the classrooms), the teacher-nominations will help to compensate for such bias. This indicates that teacher- and peer-judgments, when considered together, would give a fair judgment on academic talents.

In addition, data in the following Table 6.13 illustrate the peer- and teacher-identification patterns of gifts/talents in four areas of ‘Academic’ domain in PTSN form

According to the data in Table 6.13, the percentage of peer- and teacher-nomination patterns of each item is approximately similar. For ‘Encyclopaedia’ and ‘Lightning’ both peers and teachers have nominated more girls than boys. This contrasts with the other two items, for which peers and teachers have both nominated more boys than girls (the percentages of boys are nearly double those of girls).

Table 6.12 Comparison of peer-nomination and teacher-nomination patterns for item of ‘Academic’ domain

| Areas in Intellectual Domain (in PTSN Form A) | Gender, total number of teacher peer nominations and percentages | | | | | | | |
|---|--|------|---------|----|-------|------|---------|----|
| | Boys | | | | Girls | | | |
| | Peer | | Teacher | | Peer | | Teacher | |
| | Total | * % | Total | % | Total | % | Total | % |
| Encyclopaedia | 18 | 48.6 | 17 | 47 | 19 | 51.3 | 18 | 51 |
| Lightning | 16 | 44 | 15 | 41 | 20 | 56 | 21 | 58 |
| Scientist | 23 | 64 | 24 | 68 | 13 | 36 | 11 | 31 |
| Bright idea | 24 | 65 | 18 | 44 | 13 | 35 | 20 | 56 |

These results show gender bias towards boys in nominating to items ‘Scientist’ and ‘Bright idea’ by peers, the teacher-nominations too show the same bias in item ‘Scientist’ Therefore, sometimes this could reflect the real situation for classroom settings. However, teachers have nominated more girls than boys for the item ‘Bright idea’, which would help to compensate for any gender bias towards boys by peers. For the other two items, a higher percentage of girls than boys was nominated, by both teachers and peers. Therefore, the researcher cannot see a significant gender bias in the classroom settings in the sample.

6.3.7.3.3 Inter-peer agreement in peer nominations

Inter-peer agreement (IPA) is the most important type of reliability in the case of instruments based on interpersonal judgments (Gagné, 1999). When there are more than four 40+ scores received by a certain group for Form A and Form B of PTSN forms regarded as acceptable inter-peer agreement (Gagné, 1999, p. 36). Average 40+ number is 9, when the group has 9 or more than 9, 40+ scores it is consider as very good agreement (Gagné, 1999, p. 36).

Number of 40+ scores received by each class were presented under the data presentation of each school (appear in Appendix 6.8 under each school). The researcher created the above Table by using the data in Appendix 6.8. Table 6.14 indicates the number of 40+ scores gained by each Grade during peer nominations.

Table 6.13 Illustration of number of 40+ scores gained by each Grade in the sample for PTNS forms A and B

| Schools/Grade | Number of 40+ scores | |
|---------------|----------------------|--------|
| | Form A | Form B |
| School JA | 10 | 5 |
| School JB | 5 | 8 |
| School JC | 12 | 8 |
| School JD | 16 | 11 |
| School JE | 7 | 4 |
| School JF | 3 | 6 |
| School JG | 9 | 10 |
| School JH | 11 | 5 |
| School MA | 4 | 7 |
| School MB | 4 | 8 |
| School K | 15 | 13 |
| School L | 16 | 10 |

It is observed that for the total 24 nomination forms only one form have less than 4, 40+ scores. However, this form had seven 30+ scores and one score of 65 (of three 40+ scores), therefore Form A of School J4F was considered for calculations. Of 24 forms, eleven forms have nine or more 40+ scores. That is, nearly half of the forms are in above-average level in inter-peer agreement. Among the remaining forms, three forms have eight 40+ scores. Therefore, the sample is consistent with above average inter-peer agreement.

6.3.7.3.4 Prevalence of giftedness and talents

When examining the data collected for Objective 3, except for a few, many students were nominated by peers for more than one talent in one ability domain as well as to more than one ability domain. This phenomenon is clear when examining the data in the Tables A6.7.1 to A6.7.24 (See also Appendix 6.7) and Tables A6.9.1 to 6.9.12 (See Appendix 6.9). In addition, there are students who have been nominated for most of all the talents in most of all the domains. These data show the existence of multi-talented individuals in the sample. The results of the data analysis of Objective 1 and Objective 2- stage 1 and stage 2 revealed the existence of nearly 123 intellectually gifted or academically talented students (including gifted underachievers).

Table 6.15 illustrates the number of students and number of domains of giftedness present in those students as identified by the methods used for Objectives 1, 2 and 3.

Table 6.14 Illustration of number of gifted and talented students in the sample and number of domains presented the giftedness (considering entire sample and all domains)

| Grades | No. of students with giftedness in one or more than one area | Number of domains of giftedness present in all the students |
|---------------|---|--|
| J4A | 17 | 38 |
| J4B | 17 | 37 |
| J4C | 12 | 36 |
| J4D | 15 | 31 |
| J4E | 11 | 35 |
| J4F | 15 | 40 |
| J4G | 14 | 44 |
| J4H | 10 | 33 |
| M4A | 19 | 39 |
| M4B | 13 | 34 |
| K4A | 11 | 33 |
| L4A | 16 | 18 |
| Total | 170 | 448 |

However, the data analysis of Objectives 1 and 2 did not help to identify any other talents possessed by these students other than the academic talents. Nevertheless, Gagné's PTSN forms helped identify many other talents possessed by all the students, including the intellectually or academically gifted students. Therefore, PTSN forms help to identify many other talents in students who are not intellectually gifted or

academically talented. All together 170 (roughly) students out of 488 students were identified as gifted by PTSN forms (See Table 6.15).

As a percentage, this is about 35% of the sample. Both achievement test- marks and IQ test-marks identified 21% of the students as gifted. By careful examination of Tables A6.7.1 to A6.7.24 (Appendix 6.7) and Tables A 6.9.1 to Tables 6.9.12 (Appendix 6.9) the researcher also identified 448 (roughly) talent domains among these 170 students. This further reveals most of the students are gifted in more than one domain (These 170 are students identified only by PTSN Forms).

6.4 Presentation and Analysis of Data Collected For Objective 4

Research Objective 4

To investigate the parent's effectiveness of identifying gifts and talents in multiple domains including intellectual gifts and academic talents in gifted and talented students including gifted underachievers and invisible underachievers among primary Grade level children in Sri Lanka.

The "Parent Inventory for Finding Potential (PIP)", constructed by Rogers (2000), was the instrument used to gather information from the parents (See chapter 5, section 5.2.6 for more details). Nearly, 70% of the parent sample returned the completed inventory forms. The ratings by parents to the PIP is illustrated in the Appendix 6.11.1 Then the mean score¹⁸ of each ability domain of each child calculated and tabulated (See Appendix 6.11.2). If a student scored a mean score in between 3.34-4.00 in a particular domain, then the child is considered to be gifted in that particular domain (Rogers, 2000). The scores for the intellectual domain of PIP forms would triangulate with the results of peer and teacher nominations of PTNS forms, achievement marks and IQ scores. The findings of triangulation would be of use to find the validity of parent-nominations in academic domains. Further, during the case studies, the PIP data will be used in constructing case studies. Further still, the PIP data of the domains creative, social and artistic would be triangulated with parents' interview data, peer- and teacher-nomination results, and teacher and student interview data to find the reliability and effectiveness of parents in identifying gifts and talents in particular domains.

¹⁸ Calculations of mean score is discussed in chapter 5

6.5 Presentation and Analysis of Data Collected For Objective 5

Research Objective 5

To examine the possibility of using above level testing to identify the children who need further educational challenge beyond their Grade level from primary Grade level schools in Sri Lanka.

The criterion for selection of students for the above-level test and nature of the above-level test paper was discussed in Chapter 5 (Section 5.2.6.5).

Table 6.15 Achievement test marks and Above-level test marks: Sinhalese language of students of all Grades

| School/Student No. | | Achievement Test Marks | Above-level Test Marks |
|--------------------|------|------------------------|------------------------|
| School J | JD9 | 97 | 68 |
| | JG2 | 95 | 60 |
| | JG25 | 96 | 52 |
| School M | MA29 | 92 | 40 |
| School K | KA14 | 95 | 52 |
| | KA15 | 100 | 86 |
| | KA18 | 100 | 54 |
| School L | LA9 | 90 | 28 |

Table 6.16 Achievement test marks and Above-level test marks: Mathematics of students of all Grades

| School / SIN | | Achievement test Marks | Above level test Marks |
|-----------------|------|------------------------|------------------------|
| School J | JA43 | 99 | 83 |
| | JC19 | 99 | 78 |
| | JE17 | 98 | 88 |
| School M | MB21 | 86 | 58 |
| School K | KA4 | 90 | 40 |
| | KA15 | 98 | 70 |
| | KA18 | 97 | 56 |
| | KA20 | 95 | 50 |
| | KA22 | 85 | 38 |
| School L | LA9 | 93 | 26 |
| | LA18 | 84 | 44 |

Eleven students, sat for the above-level test in Mathematics and eight students sat in Sinhalese language. The results of the tests are indicated in the Tables 6.6 and 6.17. Of eleven students who sat the Mathematics test, seven students have scored 50 or more than 50 marks. Of eight students who sat the Sinhalese language test, six students have scored more than 50 marks. Of the seven students in Mathematics, students JE17, JA43, JC19 and KA15 has scored 88, 83, 78 and 70 marks. Similarly, student KA 15 has scored 86 marks in Sinhalese language test.

Of eleven students who sat the Mathematics test, seven students have scored 50 or more than 50 marks. Of eight students who sat the Sinhalese language test, six students have scored more than 50 marks. Of the seven students in Mathematics, students JE17, JA43, JC19 and KA15 scored 88, 83, 78 and 70 marks. Similarly, student KA 15 has scored 86 marks in Sinhalese language test.

The items for the above-level test paper were taken from a Grade 5 scholarship examination paper. The pass mark for the particular scholarship examination paper was 65% (it was actually 130 marks out of 200 marks). Six students (as indicated above in Tables 6.16 and 6.15) have obtained more than 65%. These results show their ability in Mathematics and Sinhalese language well exceeding that of their Grade level. The reason for some of the students could be because, since Grade 3, they have attended private tuition classes aimed at the Grade 5 scholarship examination, and by the time the researcher administered the test, those students would have learned the concepts and subject matter relevant to Grade 5. Since the researcher tested them using a Grade five past scholarship examination paper, some of them may have been familiar with the paper before they were tested. However, the results show the capabilities of these children to do Grade 5 Mathematics and Sinhalese language while they are in Grade four.

To identify highly gifted students in this way, it would be ideal if the selected gifted students from Grade four or three could be tested using the current scholarship examination sat at the same time as the Grade 5 students.

6.6 Presentation and Analysis of Data collected For Objective 6

Research Objective 6

To propose identification model appropriate to identify gifted and talented students including intellectually gifted and academically talented primary Grade students in schools of Sri Lanka.

At this stage, prior to proposing an appropriate model, the data collected for Research Objectives 1 to 4 will be triangulating. The researcher expected to find to what extent each method could be used to identify gifted and talented students, and to determine the trustworthiness of data collected by different methods by means of the triangulation. For this purpose, in addition to the data collected by Objectives 1 to 5, the interview data will be used. The researcher will triangulate data at two stages: Stage 1- At this stage, triangulation of data collected for research Objectives 1 to 5 will be carried out;

Stage 2- At this stage, triangulation is of data collected by interviews, (qualitative data) and the data collected for Objectives 1 to 4 (quantitative data) would carried out. This stage the triangulation of data will be carried out only with the data of 12 selected students.

Further, the triangulation is done while building the case studies.

6.6.1 Presentation and Data Analysis of Stage 1

The results of the data analysis for each objective to identify intellectually gifted or academically talented is displayed in one Table. In this Table, the results of each student gained by different methods appeared in the same row in front of the student identification number (illustrated in Appendix 6.12). The triangulation of data was carried out only with the data related to identify intellectual giftedness.

Data in the first column of Appendix 6.12 indicate that there are approximately 195 intellectually gifted students in the sample. These 195 students were identified as gifted or talented by any one or any combination of methods: achievement test marks, IQ test marks, meta-cognitive intervention, peer-nominations, parent-nominations and teacher-nominations. However, if the achievement test mark is the only criteria used to identify intellectually gifted and academically talented students, according to the data in Appendix 6.15, only 67 students could be identified as gifted. Similarly, if only the IQ test is used as the criterion, only 52 students would be so identified; if only peer-nomination is used, only 61; and if only teacher-nomination is used, only

78, and if it is parent-nomination used only 81 would be identified as gifted. Further, 29 students were identified by dynamic testing only. Only 56 students of the sample underwent dynamic testing, so this may well not be the number of students who could be identified by dynamic testing. Additionally, of 56 in the experimental group, 22 were selected as gifted by dynamic testing only. These statistics show that if only one of the above criteria is used to identify intellectually gifted children the number of the students identified as gifted would be very low compared to 195 gifted students identified by the combination of all these methods. This reveals the importance of using many criteria rather than one criterion.

When the data in Appendix 6.12 are examined carefully, it is clear that, out of 52 students identified by IQ test, only 33 of them were further identified by any one or more of the other methods. Therefore, 19 students were identified by RSPM test alone. This reveals that these 19 students would not be identified if the RSPM test were not a criterion to identify intellectually gifted students from this sample. Since the RSPM test used in this study is a non-verbal test, these 19 students who have not been identified by achievement test or any other criteria, most probably could be the underachievers of the sample. Similarly, 12 students, out of 23 students identified after the intervention (dynamic testing), were not identified by any other methods. Therefore, if dynamic testing were not one of the criteria to identify intellectually gifted students of the sample in the study, these underachievers would not have identified. These students are identified to be invisible underachievers.

In the same way, 6 students out of 61 students, identified by peers responding to the PTSN forms were not identified by any other criteria used. Hence, if peer nominations were not one of the criteria used to identify intellectually gifted students of the sample in the study, these 6 students may not have identified. In the same way, 12 students (out of 78 students identified by teachers in responding to the PTSN forms) were not identified by any other criteria. Consequently, these 15 students may have been overlooked if teachers had not been involved in this identification process. In addition to the above instances, 34 out of 80 students identified by parents were overlooked by other criteria. This indicates the importance of parental involvement in identifying intellectually gifted or academically talented children. Finally, out of the 67 students

identified through achievement test marks 11 students were not identified by any of the other criteria. Therefore, these students would be not represented in the gifted sample if achievement test marks were not one of the identifying criteria.

6.6.1.1 Validity of data identified by different methods

The data gathered by each method will be triangulated by comparing the results gained in each of the methods.

6.6.1.2 Achievement-test Marks

About 67 students were identified as academically talented by achievement test marks. Of them 11 students were not identified by any other method (that is, out of 67 students, 56 students were identified by other methods too). Of these 56 students, 34 students were identified as gifted by more than two methods (See Appendix 6.12 to identify this situation). This gives an additional strength to the data. Therefore, achievement test data show a considerable validity.

6.6.1.3 RSPM test marks

Fifty-two students were identified as intellectually gifted by using RSPM scores as one of the methods to identify them. Of these 52 students, 33 were identified by at least one other method. Of these 33 students, 17 students were identified as gifted by more than two other methods (See Appendix 6.12 to identify this situation). This gives an additional validity to the data.

6.6.1.4 Peer nominations

Sixty-one students were identified as intellectually gifted or academically talented by using peer-nominations as one of the methods to identify them. Except for 6 students, all the other 54 students were identified by other methods too. Of these 54 students, 39 students were identified as gifted by more than two other methods (See Appendix 6.12). This gives an additional validity to the data.

6.6.1.5 Teacher-nominations

Seventy-eight students were identified as intellectually gifted or academically talented by using teacher nominations as one of the methods to identify them. Except for 12 students, all the other 66 students were also identified by another method. Of these 66 students, 41 students were identified as gifted by more than two other methods (This

result may be identified by examining the data in Appendix 6.12). This gives an additional validity to the data.

6.6.1.6 Parent-nominations

Eighty-one students were identified as intellectually gifted or academically talented by using parents' nominations as one of the methods to identify them. Except 34, any one of other method or methods too identifies other 47 students. Not only was that, out of these 47 students, 23 students were identified as gifted by more than two methods (See Appendix 6.12 to identify this result). This gives an additional validity to the data. Even though, the parents' ability to identify gifted children is still a matter of controversy these results show that about 58 per cent¹⁹ of parents' identifications are matched with the results of one or more than one of any other methods.

6.6.1.7 Dynamic testing (testing followed by intervention)

Twenty-three students were identified as intellectually gifted by testing the students after the intervention. Of these students, eleven students were identified by at least one other method (mostly by parents and peer nominations: see the data in Appendix 6.12). Since only 56 students were tested by dynamic testing the student numbers are low compared to other methods. However, the students identified by intervention are gifted underachievers. Therefore, it is difficult to identify them by any other methods used in the study. In particular, it is important to note that 12 of these students were invisible underachievers and were not identified to have high potential by any of the other instrument used.

When the above results are summarised, it is clear that not one single method shows one hundred percent validity. However, the analysis revealed that data collected by most of the methods agreed, to a certain extent, with the data collected by more than one other method. The validity of each method could be considered as average or more than average. However, the data analyses show if only one or two methods were used to identify intellectually gifted or academically talented children, it would not identify all the 199 gifted and talented children from the sample. Therefore, it is most appropriate to use multiple methods in identifying gifted and talented children.

¹⁹ $47/81 \times 100 = 58 \%$

In addition, for Objective 5, the researcher identified the appropriateness of using above-level testing to identify academically highly gifted children. Nineteen students were tested by an above-level test (one Grade level above). Eight of them scored more than 50 marks in the test. Two scored more than 85 marks and three scored more than 70. Since, the Grade four students were tested by Grade five test, those who scored high marks in the test indicated Grade five level achievements. This shows the possibility of introducing above-level testing to identify academically gifted and talented children from primary level Grades of Sri Lanka.

6.6.2 Presentation and Data Analysis of Stage 2

Data collected by interviews are presented in Appendix 6.13. The results of data analysis (for Objectives 1 to 4) of each student involved in the case studies are also included in Appendix 6.13.

This case study will develop around 14 students, a mixed group of children who have been identified as highly gifted, moderately gifted, gifted underachieving and gifted invisible underachieving by the quantitative data gathered to identify the gifted and talented students in the research sample during this study.

The students in this case study are from different school environments and from different socio-economic backgrounds. Considering the ethical issues, the researcher will not reveal the exact names of the students or the schools. The schools will be introduced as School J, K, L and M. Within this case study, four sub-case studies will be developed under each school. The objectives of building the case studies are to:

- triangulate the data identified by quantitative methods with data identified in qualitative methods (interviews)
- identify the reliability and validity of the quantitative methods used
- identify the factors behind the higher achievements and lower achievements of gifted individuals
- identify the extent of existence of giftedness, gifted under-achievers, gifted higher achievers among the all socio-economic groups in Sri Lanka
- propose a suitable model to identify gifted/talented students in primary education system of Sri Lanka.

6.6.2.1. Case study on School J

In Sri Lanka, parents try to admit their children to the most prestigious single sex national state schools in the cities. When it fails, most affluent parents admit their children to private schools and the richest of these admit their children into international schools. The rest try to admit their children to the prestigious mixed national schools (1AB Schools) situated in the semi urban areas, but not very far from the cities. Even though, there are rules and regulations (especially based on distance to the school) and few other standard criteria for school admissions, the able parents however admit their children in these schools. Most of them belong to upper middle class and middle class families. However, since the main criteria for admission is distance, children from lower middle class and as well as low socio-economic families do get an opportunity to admit their children into these schools.

School J, the most prestigious national school in Western province of Sri Lanka, belongs to the above mentioned school category. It has great demand next to single sex national schools in the Western province compared to other mixed national schools in the province. The school is situated at Sri Jayawardenapura educational zone (Sri Jayawardenapura is the political capital of Sri Lanka), about 22 kilometres from the Colombo city, the commercial capital of Sri Lanka. The school has a history of more than 100 years, and therefore the school is rich with essential physical and human resources including a strong past pupils' association, which looks after and maintains the school well, and provides all the facilities for the school. The school provides a quality education to its pupils within this rich background. The admission to Grade one is based on many criteria, such as distance, past pupil's children and brother/sister category. Children from all level of socio-economical backgrounds are learning in this school. Nevertheless, a higher percentage of children from upper middle class families attend to this school compared to other semi urban schools. The classteachers of grade 4 classes are female teachers. However, the principal of the school is a male.

Saduni (J43)

Saduni is studying in one of the parallel Grade four classes in the primary section of School J. She is a highly achieving student, compared to the others in her Grade. She has scored RSPM in 85th percentile band, she is not in the intellectually gifted group,

but her achievement marks 99 and 98 for two subjects Mathematics and Sinhalese are evidence of her higher academic talents. Her peers have identified her significant achievements and nominated her for 2nd highest position in academic achievements. Her class teacher too has nominated her for three out of four items in the academic subcategory in nomination forms. Her parents too have rated her for higher intellectual capacity in the parents rating forms. She also has nominated herself for all four items of academic subgroup. Further, she has scored 83 for the above-level test in Mathematics. However, neither peers nor the teacher has nominated her to the other abilities for which she has self-nominated ('Judge', 'Counselor', and 'Actor').

However, as the parents have nominated her for Social domain which has a relationship with the 'Counselor' and 'Judge' items, she shows these talents at home. Saduni's mother is an educated lady. She holds a bachelor's degree in Management and occupies a managerial post in one of the government offices in Sri Lanka. However, her father is not as educated as the mother is and has qualified to GCE (A/L) and has followed a course under the National Apprenticeship Board after leaving the school. He presently deals with business work. The highest educational level attained by other members of the paternal side is GCE (A/L). One brother of her mother is a graduate, and other members of mother's family are educated up to GCE (A/L). Parents of both mother and father who are not very much educated live in a village away from Colombo city.

Saduni's mother claimed Saduni has a good memory power. This characteristic can be expected from a child like Saduni who has scored in 85th percentile band in IQ test, which denotes her good intellectual ability for her age. Mother, further said she noticed that her daughter has a higher intellectual capacity. Saduni's mother revealed her brother too has such memory power for his young age. Additionally, Saduni is a girl with much enthusiasm, and very keen on her studies. She always tries to do her studies by her own, but at difficulties, she gets help from the mother. She attends only one tuition class aimed at further support for the Grade five scholarship examination. Her class teacher too admitted that she is a self-motivated girl. She comes to the school daily unless she is very ill. Saduni's ambition is to be a lady-doctor in the future. Her self-motivation and enthusiasm towards academic work may be triggered by her ambition.

She gets an enormous help from her mother on her studies. Even though the mother is a busy person, she always helps Saduni in her studies. Saduni's class teacher too highlighted her mother's great interest on her daughter's studies. Her mother frequently comes to the school, meets the class teacher, and discusses her work. Being a working mother, Saduni's mother's interest in her daughter's studies is very remarkable. Since her father is busy, her mother is only able to help in her studies at home.

In addition to helping in her studies, the mother provides her with many children's newspapers, which have educational programs, which help her to prepare for the scholarship examination. Saduni said that she does the exercises in those newspapers too, in addition to her schoolwork and tuition class work. She loves to read books and newspapers, even the daily newspapers too. Saduni said she borrows books from the School Library and reads. Further, she gets storybooks from her father too. There is no doubt that she express her knowledge gained through reading in the classroom, and that may be a reason that her peers and the class teacher all have identified and nominated her (in PTSN forms) as second 'Encyclopedia' among the Grade peers. In addition to the support given in her studies, her parents take Saduni to see historical and important places in the country, as they believe such observations would help to gain her more knowledge.

Both her mother and class teacher comment that she does not have any other remarkable talents in other fields other than academic work. Peers too supported this, by not nominating her for any other talents other than the academic talents. Neither, she herself nominated her for any other talents other than 2 items in social talents. The teacher mentioned that she gets on well with others. However, teacher has not nominated her for social talents. Further, she added that Saduni does not like to take leadership roles. Her mother too accepts this and adds that she loves to do drawings, even though she is not very talented in art. She loves to watch the sky at night to see the star patterns and question on them.

Pasidu (JB17)

Pasidu is also studying in a Grade four class in primary section of School J. He showed neither significant achievement in Mathematics /Sinhalese, nor high scores in RSPM test to consider him as gifted. He was in 10th percentile band in his pretest

RSPM scores. However, he was in the experimental group and had an opportunity to undergo the short intervention. When he sat to the RSPM test after the intervention, he showed a remarkable achievement in cognitive aspect, scoring marks to reach the 95th percentile band in RSPM test. To his age range, reaching 95th percentile band indicates his superior cognitive ability or higher giftedness. His test marks 56 and 66 respectively in Mathematics and Sinhalese showed his poor achievements irrespective to his high RSPM scores. He was a 'gifted underachiever'. Further, his high cognitive level was identified after the intervention, and was not visible in the first RSPM test. Therefore, he is an 'invisible gifted underachiever'. His class teacher has not nominated him for any talent item. His peers nominated him for 1st place in item 'Comedian' in the drama subcategory. This shows neither teacher nor peers have identified any academic talents in him. However, his mother has rated him for 'remarkable' level for the intellectual domains.

Pasidu's mother studied up to GCE (O/L). His father holds a Bachelor of Science degree in Mathematics. Father is a full time private tuition Master in Mathematics, while his mother is a housewife. He has a 4-year-old younger sister. Maternal aunts and uncles or cousins are not much educated. They have studied up to GCE (O/L) or GCE (A/L). Nevertheless, his paternal grandfather is the co-author of the Buddhist Encyclopedia and still he is engaged in translations and other academic work. In addition, father's elder sister is a graduate too. She is a teacher, qualified with a postgraduate diploma in education. They live in the neighborhood.

According to Mother, Pasidu is intelligent but very careless in his schoolwork. He does very little study, is less methodical, very mischievous, and does whatever he wants to do. He is a boy who cannot stay in one place for a long time. However, he is fond of creating drawings in the computer and he often engages in that work, usually for more than 2 hours. He has many computer skills. Mother has not indicated his higher creative abilities in parent ratings forms. Neither his peers nor the teacher acknowledged this by nominating him for programming or any other creative abilities. Most probably, he does not have an opportunity to show his computer talents in classroom. He has not much significant abilities in art, dancing and music. Nevertheless, he likes to do sports.

However, he does like to do reading. In spite of his dislikes to studies, he is very inquisitive about nature. He always questions the phenomena in nature. According to mother, his sister is much more inquisitive than he is and always does lot of questioning. He likes to repair his broken toys.

Mother says she helps him in studies and father brought him books. They send him to Grade five-scholarship class too. Even though his educated grandfather and aunt are close by him, he never takes help from them in his studies.

According to the teacher, he is a slow working child; parents say that he dislikes the school. Teacher further said, in contrast to the parents' ideas, that the student complains he is having a headache and that it is the reason for his absence from school. Pasidu is worried, that his mother does not believe him when he complains about it. When teacher discussed this with Pasidu's mother, she was told when Pasidu does not finish his homework he refuses to go to school and complains of this headache. What teacher feels is that his parents have less attention on him, and even the parents do not frequently attend to class meetings or any other school events.

However, Pasidu's version is different from his mother's. He said, "I like to go to school but because of my headache I am sometimes absent from school".

According to Pasidu, he gets a little help from his mother, as she is busy with his little brother. Only father helps him and that is only when he is free. His father brings him storybooks and educational newspapers and he enjoys reading and working on exercises relating to the scholarship examination in these newspapers. Pasidu further added that he liked to work in the computer especially in creating drawings and, sometimes, he likes to do art on paper too. In addition, Pasidu has self-nominated for items like 'Hercules', 'Tireless', and 'Hare'. His peers or the teacher had not nominated him for any of these items. However, his mother stated he is good in sports. In addition, Pasidu has nominated himself for items 'Craftsman', 'Sociable' and 'Musician' too, but nobody nominated him for these items. Pasidu had nominated himself for item 'Comedian' and he has received the 1st nomination by peers to that item.

Madushica (JB38)

Madushica is studying with Pasidu in the same class. Like Pasidu, she too is an ‘invisible underachieving’ child. Her achievement test marks of 14 for Mathematics and 27 for Sinhalese language show her poor achievement level. Additionally, her RSPM test score of 26 (25th percentile band) is an evidence for her poor intellectual abilities. Like Pasidu, she too was in the intervention group and scored 47 for RSPM test in the post-test after intervention, resulting an upgrading her percentile band up to 95th from 25th. Neither peers, nor the class teacher or the parents indicated any academic talents in her.

Madushica’s mother and father both are educated up to GCE (A/L). Mother is an English trained teacher. Father owned a small grocery shop. Madushica has a younger sister of four years old. She attends a Pre-school in the mornings and rest of the day she stays with her grandmother who lives close by until the mother comes home. Mother said she has no time to look after Madushica as she is busy with housework and schoolwork. In addition, since she is missing the youngest child while she is at school she has to be with her. In these circumstances, she admits that she is neglecting her elder daughter. She further added the class teacher has also discussed this with her several times. Mother further said, ‘Madushica does her work on her own and sometimes brings the work to me and says, ‘At least look at this and see whether it is correct’ (This shows how much Madushica feels the mother’s negligence towards her). Since, the father also has full-time work in his grocery; he hardly has time to see her studies. Parents bought her necessary books as well as the educational newspapers that guide for the scholarship examination. Mother accepts that Madushica is weak in her studies.

Even though she is not good in her studies, she seems to be is very inquisitive about the phenomena in nature. She used to ask questions at the times when it is raining. She looks at the rain and the sky and asks lot of questions on rain (such as ‘How is it happening? Why it is raining?’). Not only has that, at nights she looks at the sky to observe pattern of stars and questions about it. Mother said she is very sensitive too. When the puppy at home cries when it is hungry, Madushica also cries. She is very sad and cries when she see dead birds or animals. Mother did not mention about any other talents in her, but said that she likes dancing, and at home, she practices dances

she learned at school and teaches them to her sister too. In addition, she likes to do art.

However, the teacher has identified Madushica's capability to do academic work well. The teacher believes that since she gets little help from mother and father she cannot improve her abilities. She is completely dependent on the school, and since the teacher has to work with a class of 46 children, she finds it difficult to pay much special attention to her every time. The teacher has explained this several times to her mother, who is a teacher too. Teacher now feels there is a little improvement in her work and the mother is giving more attention than earlier. Her parents very rarely attend the class meetings. Madushika is a very quiet girl. She does very little questioning during the lessons. Her work is incomplete and always tries to be away from the work. She easily gets bored with her work and she needs a motivation from the teacher to start up the work again. However, when motivated sometimes she managed to complete her work in good quality.

Her school attendance is not at a satisfactory level. The main reason for this is, she always suffers from wheeze. Teacher guesses this illness too may affect her studies. Teacher has seen her sometimes do art when she feels bored, but she is not very talented in art.

Madushica too said she is getting a little help from her mother and father on her schoolwork. Since her mother has to spend time with her little sister, mother cannot find time for her. Her father too comes home at late in the night and hardly gets time to help her. Madushica said she likes to go to school, but since she gets wheeze sometimes she has to stay at home. According to Madushika she likes to do art and is good at singing. She has certificates for singing in her special singing class and even at her pre-school time. Even though no body nominated her for any talent item she has nominated herself for items like 'Bright idea', 'Actor', 'Musician', 'Singer', 'Tireless', 'Craftsman', 'Dancer' and 'Speaker'.

Kavinda (JE17)

Kavinda also studies in one of the Grade four classes in School J. He has demonstrated his superior cognitive abilities by achieving 95th percentile band in the RSPM test. His Mathematics marks (98) further evidence his higher academic talents.

Unlike Pasidu and Madushika, he is an academically highly talented (achieving) boy. His peers too have nominated him to 1st place in 3 academic items and to 2nd place in the other academic item. He has scored 88 for Mathematics in the above-level test. Kavinda's mother and father are both educated up to GCE (A/L). Mother has missed the university admissions by 2 marks. Father is a Navy officer. They have two sons. Kavinda is the eldest, and the youngest is studying in Grade 2 in the same school. Kavinda has showed a good memory power from his very young age, and started to talk very early. Not only Kavinda, her brother too is like that. Both of them can understand anything easily. By self-nominating himself for all the items in the academic sub-group, Kavinda indicates that he has confidence in his academic abilities. Parents, by rating his intellectual giftedness and academic talents in the higher range in rating forms, confirmed his abilities too. His favourite subject is Mathematics, he has high academic talents at his very young age, and he works on his own. The teacher too, indicated that he is a boy who has very much self-confidence. According to the teacher, Kavinda's improvement in his work is due to his own hard work. He is a boy who thinks a lot. He does not get discouraged at any moment. He is always motivated to do class work. However, the teacher has not nominated him for academic talents.

Kavinda's mother helps him in studies. Not only has the mother, the father too helped him when he is free. Kavinda very much appreciated his parents' help in his studies. He said, "When my father is at home my father used to play with my brother, and then the mother is free to help me in my studies". In addition, parents bring him books and educational newspapers for him as additional support. Further, the parents send him to a scholarship class and to an English class on Saturday and Sunday. The class teacher too appreciates the parents' concern on him, even though parents do not come for each class meeting.

Kavinda, is not interested in nature or in art, music and dancing. His parents have bought him books on nature, and now he shows more an interest on nature than earlier. His teacher too believed he has no special abilities in aesthetic subjects or in sports, but has average abilities in most of these fields. The teacher or the peers have not nominated him for art, music or dancing. Kavinda, said even though he is not good in art, he likes to do art. However, the parents have rated him in the higher range in his artistic talents in the parents' rating scales.

Parents indicated his interest in playing cricket, but did not indicate his talents in cricket. Only Kavinda has nominated himself for 2 items of physical abilities. Apart from his academic talents, he showed talents in mechanical and technical areas, which express his creative abilities. The class teacher mentioned his special talents in creative work (handwork). Not only the teacher, the peers have nominated him to third place in all the items in sub-group mechanical and technical. However, mother did not mention about his creative abilities, but placing him on a higher range in creative domain in the parents' rating scales indicated that parents too are aware of his creative talents. Kavinda added he likes to repair their broken toys and any other things at home: "Nevertheless, I do not break my toys to fix them again as some of my friends do". He too has self-nominated for craftsmanship indicating his creative abilities.

Further, Kavinda is an emotional boy. He feels sorry when others are in pain or unhappy. He loves the brother very much, and to the parents too. The teacher concluded that he is a forward boy and represents himself in any activity. This further confirms the nominations given by teacher and peers in the items 'Counselor', 'Speaker' and 'Stimulator' in addition to his talents mentioned so far.

Puja (JC31)

Puja too is educated in School J. She has gained very high RSPM scores (53) when compared with her age peers. She is in 98th percentile band in RSPM level. She is the highest scored student for RSPM in her class. She shows high achievement in Mathematics (89), but for Sinhalese language, she has scored 80 marks. However, peers have nominated her to the 2nd place in all the items in sub-category Academic and teacher too has nominated her for 2 items of that sub-category. This indicated that she possesses remarkable talents in the academic field (maybe more than to a level indicated by test marks of Mathematics and Sinhalese language, since sometimes test marks could depend on mental or physical situations of the child). Her parent ratings, which indicate her in upper range in the intellectual domain, also confirmed her academic talents. Surprisingly, she has not nominated herself for any items in academic talents.

Puja's mother studied up to GCE (A/L)-Commerce and she is a housewife. Puja's father is a chartered accountant. Puja has an elder brother studying in Grade 10. He too studied in the same school with Puja, up to Grade 5. He got high marks in scholarship examination and entered to one of the prestigious single sex colleges in the city. Puja's maternal side family members have studied up to GCE (A/L), while her paternal grandmother is a school principal, elder sister is school vice-principal too, and younger sister is a teacher too. As a girl living in a rich academic environment, Puja is self-motivated. Her ambition is to be a lady doctor. The enormous guidance and help she is getting from the parents, and the parents' high expectations of her future motivate her. She is a girl with high self-confidence. She always tries to do her very best in every activity. The mother still has to motivate her elder brother on his studies unlike Puja.

Puja's mother helps and looks after her studies very well. She gets additional help from father and the brother too when she needs. She attends a tuition class aiming to the scholarship examination. Mother hardly misses any parents' meetings or any other school events. She frequently inquires about Puja from the class teacher. Puja is very inquisitive about the nature. She always asks clarifications from her father and brother on matters on nature. She loves animals and birds.

Puja likes to come to school daily. She has a good belief in her teacher and she likes the teacher very much. Puja said, 'Our class teacher is very keen in our studies and she always gives us advices to learn well'. Puja's favourite subject is Mathematics, but she likes all the other subjects too. She is good in English too. She is a good reader. Especially, she is fond of reading books on nature. At school when she finishes her work, she reads books. She gets storybooks and books on nature and educational newspapers from the parents. At home, she likes to work in computer too. Other than the academic subjects, she likes art and dancing. According to her mother, she gets very disappointed when she could not finish her art as to the level she expected. She has received first nomination by peers to the items arts and dancing. Her mother too has rated her in artistic domain to a higher range.

Puja is a forward girl, who presents herself at any event in school, and has good leadership qualities too. She is a very good speaker. She voluntarily does speeches in school assembly. She gets on well with others. Therefore, she has many friends. She has received 1st nominations for items 'Leader', 'Sociable', 'Speaker' and

‘Spokesman’ from peers and nominations for ‘Leader’ and ‘Spokesman’ from the teacher. Her mother highlighted her leadership abilities and speaking abilities too, and also mother has rated Puja for her social abilities to a higher range in the parents’ rating scales. Puja too has also nominated herself for items ‘Spokesman’ and ‘Speaker’. Peers’ 2nd nomination for items ‘Counselor’, ‘Stimulator’ and ‘Judge’ under the socio-affective domains further confirms her abilities in social domains. Even though, neither parents nor the teacher nor Puja has highlighted her creative abilities, the 2nd nominations received by peers to ‘Handy man’, and 1st nomination for the items ‘Craftsman’, ‘Artistic’, parents’ ratings for higher range in creative domain, and Puja’s self nominations for the item ‘Craftsman’ indicated her high abilities in the creative domain. The first nomination for items of drama sub-group and 2nd nominations to musician sub-group by peers indicates her talents in relevant sub-groups. Her teacher too has nominated her for the item ‘Singer’.

Considering all her talents, Puja is a multi-talented child, who has talents almost in all ability domains. Further, she is a sensitive and emotional girl. However, according to her mother, she is a little hot-tempered.

Eshan (JE23)

Eshan also studies in one of the Grade four classes in the primary section of School J. Eshan obtained RSPM mark of 44, which is in the 85th percentile band. He was not in the top 10% of the intellectually gifted group, but his RSPM mark was 44, and cut off mark of the top 10% were 45 (90th percentile band). He was included to the case study because of the teacher’s request. However, his achievement test marks in 38 for both Mathematics and Sinhalese language indicates his lower achievements in spite of his intellectual abilities. Therefore, Eshan could be recognized as a gifted underachiever. Neither his peers nor the class teacher had nominated him to any item in academic area. This confirms his lower academic talents too. Not even Eshan has self-nominated for any academic items. However, his parent ratings indicated his high intellectual abilities (not academic), but they have not rated him for higher academic abilities.

Eshan’s mother and father were both educated up to GCE (O/L). Father is a businessman and has a good income. Therefore, they have no financial problems. None of the maternal or paternal family members is educated up to university level,

but only up to GCE (A/L). Eshan has a younger brother of 2 ½ years old, and an older sister who studies in Grade 9 of School J.

His class teacher made a special request to the researcher to include him to the interviewing sample as she feels Eshan is a special boy. Teacher has identified him as a very intelligent boy. Parents also find that Eshan is a clever boy. He likes to solve problems and to work in the computer. He likes to think deeply on matters for long periods.

According to the teacher, he is a very creative boy. His parents too had identified his creative abilities. Also, parents rated him at high range in artistic domain. Further, the mother mentioned that she too has fair abilities in art. Not only Eshan and the mother, his sister too has art and creative abilities.

Eshan too has nominated for himself for arts talents. He very much likes to draw vehicles. His peers have nominated him to the 3rd place in the item Art. Further, his peers revealed his creative abilities too by nominating him to 2nd place in the item 'Craftsman' and to 1st place in the item 'Handy man' and mechanical-technical domain. Eshan confirms his creative abilities by nominating himself for items 'Craftsman', 'Art' and 'Handy man'. He likes to repair his broken toys, and sometimes he separate toys into parts and fixes them again.

Mother believes, since she is busy with the youngest child the support given by her to him is not adequate. She hardly gets a time to spend on the eldest son. The father also hardly gets a time to spend on him, as he is very busy. She said, "But we send him for tuition classes."

Eshan's views on his parents' support: "My mother used to go for dress-making classes, and also has to look after my younger brother. Therefore, she has no time to help me on my studies. My father can help me when he is free only. My elder sister sometimes helps me. She is good in her studies. She normally gets the 3rd or 4th place in her term end class test".

The teacher too sees that Eshan's weaknesses towards academic work are due to the parents' lack of support and negligence towards him. His attendance to school is bad. He does not stay in the after school classes. On the days he stays, the mother does not send his lunch in time. It may be a one reason that he does not stay after school. Their

financial status is high. Teacher further added, “I believe I can help him if the parents understand the situation”.

He always likes to see the mother and father both with him. He is a very sensitive person. He cries when he feels sorry even when he watches movies. His kindness to animals and birds is enormous. He has a rare talent: he can imitate the noises of several animals and birds. Even when the parents ask him to stop that habit, he does not listen. He enjoys doing it. In addition, he can talk as elderly persons and as well, as babies. Parents believe it is a special talent in him. Teacher has nominated him to item ‘Actor’, and peers have offered 2nd nominations to him to item ‘Comedian’. Even though, none of them mentioned these talents he might have talents in the drama category too. Further, teacher has nominated him for item ‘Spokesman’, but not peers; however he has received few nominations for item ‘Leader’ and ‘Sociable’ too. Eshan mentioned, he has obtained certificates for running events in the school sport meet. When the researcher asked him about his willingness to do school work, he just smiled and said he prefers to do more work that is creative even during the school hours. Eshan is a boy with mix of intellectual and creative abilities, and his creative abilities seem to be is more prominent over intellectual abilities.

Rusiru (JC2)

Like Eshan, Rusiru too is an underachieving boy. However, compared to Eshan, Rusiru show a higher intellectual capacity, with an RSPM score in the 98th percentile band. However, both are underachieving. His Mathematics and Sinhalese marks are not very much low.

Rusiru’s mother and father educated up to only GCE (O/L). Mother is a housewife. Father is a businessman. Rusiru is the only child in the family. Since his father is busy with his business, mother only looks after his studies. Parents send him for tuition classes aiming at the scholarship examination.

They also buy him newspapers, which have exercises aiming the scholarship examination. Additionally, they buy him many other textbooks that consist of exercises relevant to the scholarship examination. Mother said he sometimes refuses to do studies.

When the researcher discussed this with Rusiru he said,

“My mother always likes to see me doing some exercises regarding the scholarship examination. I am tired of doing them, now it is very boring for me. I like Mathematics. Since my father is not at home in the daytime, my mother uses to go daily to her brother’s place close by. I also go there with her. While I was there, she asks me to do exercises in the newspapers and books meant for scholarship examination. In my uncle’s place, I have cousins, but my mother does not allow me to play with them, but ask me to do these exercises.

His mother feels he is a slow worker. He does not try to finish his work in time. They are worried about this as this could affect to his scholarship examination, which is highly competitive.

The teacher finds that parents are over-enthusiastic over Rusiru’s studies and they complain about his slowness. According to the teacher, he does not attempt to do a problem at once. He tries to look at it in many sides and try to identify several ways of solving the problem and then attend to it. Therefore, he is a slow worker. Teacher further said Rusiru is a quiet boy. However, the teacher has identified his leadership qualities and has appointed him as the class monitor. At first he was little reluctant to take responsibilities. Nevertheless, according to the teacher, later when he got confidence over his leadership qualities he willingly takes any responsibility. According to the teacher now, he is a forward boy than earlier, and he is improving. The teacher further revealed that at the early stages of Rusiru’s life, her mother had a problem. The mother has been ill treated by her parents and family members because of her marriage and did not have any relationship with them. Rusiru also, badly experienced this and he too had been mentally affected. Because of her mental situation, the mother neglected Rusiru in his early years. However, the family members are getting on well with them now.

Mother added, ‘He is bit improving now’. Mother mentioned his interests in art and singing, but she has not noticed any other talents on him. Rusiru wants to improve his art talents, but her mother has told him that she will send him to a special art class after the scholarship examination. Presently apart from the scholarship class, Rusiru attends an English class too.

Neither teacher nor peers have nominated Rusiru to academic domain. This indicated his less significant academic talents. However, peers have identified his singing talents and has nominated to 3rd place in item ‘Singing’. However, teacher has not

nominated him for the item 'singing', but she has nominated him for the item 'Counselor'. The teacher would have identified this characteristic along with his leadership qualities. Further, Rusiru too has nominated himself for item 'Singing' and 'Counselor' too. This shows that he has identified his talents. Her mother too mentioned about his art talents even though the peers and teacher has not nominated him for art. However, the parents have not returned the rating form.

In addition to his art and singing talents, Rusiru nominated him for items 'Musician', 'Craftsman', 'Handy man', 'Mechanic', 'Actor', 'Counselor', and 'Judge'. Talents like 'Craftsman', 'Handy man', and 'Mechanic' revealed his creative abilities. Further parents, peers and he himself has revealed his abilities in art. Art ability too is an indication of creative ability. Therefore, even though others have not identified his creative abilities very much, he would have identified his abilities. Some times, he may be a boy with creative giftedness whose creative talents are not developing to a significant level. The teacher's observation, 'that he does not attempt to problem once, but he looks at it and find different ways to solve' may hint his creative giftedness too.

School J - Teachers' and principals' views on identification process

In addition to the above views on students, the researcher had an informal discussion with the teachers regarding the methodology carried out to identify the gifted students and its benefits. Teachers' idea was that it is difficult to get the participation of all the parents in this type of task, but they said the majority would cooperate. They agreed: "Getting their responses to a rating scale is also difficult", and "We cannot expect that all will return it." Teachers believe that even though without the parent's involvement they can identify gifted children by other methods that used in the research. They were highly satisfied with the nomination forms. They agreed with peer-nominations too. Their idea was with a combination of peer and teacher and achievement marks, they would be able to make a judgment on students. They were surprised with the results of the nonverbal RSPM scores. They said such RSPM tests would be of much benefit in identifying under-achievers in their classrooms, as the number of children is too high (In some classes there are 49 students). They believe after identifying underachievers through such RSPM test teachers can develop them by giving more attention rather than considering them as weak children. However, one teacher has already identified most of gifted underachievers in her class. She did not classify them

as gifted underachievers, but she said, “I know these children are more intelligent than some of the bright children in this class, but they are exceptional children. It is very difficult to make them work. Even their parents do not care for them”.

The other issue the teachers face is the scholarship examination. Even though the School J is a good national school, parents are keen to put them to a better national school in the Colombo city. Therefore, teachers have to work towards that examination too. Not only has that happened, scholarship examination results become one of the unofficial methods of teacher evaluation. Teachers believe if they can start to identify them at the beginning of Grade four or end of Grade three, the students would be much benefited. Further, they said, that identify them early as possible and provide necessary provisions would help more students to get through the scholarship examination too.

Further, the school principal too showed his interest on this type of identification method. He said their ambition is to develop students and he further added that he will give his cooperation to teachers to implement a program like this from which he believed more children would benefit. Additionally, he said that, since the school is a prestigious national school, he is not much aiming for the scholarship examination and therefore, he can get cooperation from his staff for this kind of program (but the teachers do more concentrate over scholarship examination).

6.6.2.2. Case study on School M

This is a school situated in a semi-urban area like School J. It is closer to Colombo city than School J. This is a 1C type school. However, this is not a prestigious school as J. It can be considered as a middle level school. This semi-urban area is closer to a main city (not Colombo city) in which there are several single sex (especially girls' schools) 1AB type National Schools as well as many other 1AB type mixed national schools are present. Parents who belong to high and upper middle class socio-economical backgrounds send their children to these city schools. Therefore, the remaining students, (most of them are belonging to low socio-economic backgrounds) only attend to this school. The living status of the families of the students who attend to School M is different from the families of School K and L in which the parents also are from low socio-economic backgrounds. The families of School K and L live in their villages with their parents and relatives close by, and they middle class houses with a small garden. However, most of the families of School M live nearby but have moved there from other areas. Some may have acquired the lands illegally and built

little huts and live in them. Some of the houses can be describe as ‘line houses’ with poor living conditions, situated very close to each other. Since this is an area closer to the city, they have very limited land and cannot grow anything in their gardens, so they have to buy every thing from the market. Therefore, their financial situations are very low compared to the families of School K and L.

In School M there are two parallel Grade four classes, and the classteachers are females. The principal is also a female.

Most of the mothers could not leave their younger children at home and come for the interviews at school. Therefore, the researcher visited their residence to interview them.

Chanu (MA29)

Chanu by obtaining 92 for Sinhalese language has shown her talents in academic areas. She has obtained 82 marks for Mathematics too. She has obtained the 80th percentile band in the RSPM pretest; however, she was not in the experimental group (but in the control group) and scored at 90th percentile band in post-test. Therefore, she is an intellectually gifted child. Further, she has received teacher nominations for three items out of four items in academic sub group. This indicated the teacher too has identified her academic talents. She has received, 4th nominations for 2 items and 1st nomination for 1 item of academic subgroup by peers. This shows her talents in academic areas (may be moderate talents) even though the peers have not identified her as an academically highly talented individual. Her achievement test marks of Mathematics shows that she is not a highly academically talented in Mathematics. Not only the teacher and the peers, the parents too had identified her academic talents by rating her in the upper range in academic talent fields in the parent rating forms.

Chanu’s mother and father both educated up to Grade 9. Her mother is a housewife and the father is a three-wheel driver, hiring his own three wheeler. The family lives in a better house (but a small house), which is situated in better surroundings, compared to the families of most of the children in his class. Chanu has a 2 year old younger sister.

Chanu has started to talk when she was just before 1 year. She was able to read at her pre school age. Both mother and father were at home by the time the researcher visited them. Parents said she is good with her studies. Nevertheless, they said

sometimes they feel she is neglecting her studies too. She does not attend to extra classes, but mother helps in her studies at home.

She likes to read books and newspapers. Parents buy them for her. She is a girl who loves the nature very much. She likes to walk where there are more shrubs and trees while observing wild life and do questioning too.

She is always asks the question how the world is formed. She has not yet gets a proper answer to that, and still keep on questioning on that from every body.

They feel she is good in Sinhalese language than Mathematics. Recently she has written about herself, which cause the parents to feel very sorry about her. Teacher too highlighted about her Sinhalese language competencies as well as her talents in essay writing. However, Chanu does not mention any special interest in Sinhalese, saying that she likes all of her subjects at school. She is a girl who questions during the lessons. Teacher very much appreciated the parents concern on her studies. Chanu does not attend any special classes like many of her friends, but her mother helps her with her studies. Further, Chanu mentioned that her father buys storybooks for her and as well as books and newspapers that ment for scholarship examination. Chanu comments, she try to do her studies well, because she likes to learn and because her parents too motivate her to do her studies well.

Apart from her academic interests parents say she is not very good in aesthetic subjects, but has little talents in singing and dancing. Even, the teacher said she is good in-group singing and also compared to other she has talents in dancing and music too. Peers by nominating her to 2nd place in item musician and 1st place in items singer and dancer they too have agreed with her talents in these areas. Further, peers have nominated her for drama category too. The parents have nominated her in upper range in artistic domain to indicate her artistic abilities they mentioned. However, neither peers nor teacher has nominated Chanu for artistic abilities. Nevertheless, peers had nominated her to 2nd and 3rd places to items like handy man, craftsman. Teacher too has nominated her for these items. Her parents' nominations on art abilities and teacher and peer nominations for handy man and craftsman indicate her creative abilities. Further, her parents rated her creative abilities in to an upper range too. Not only have that, her abilities in needlework, stated by the teacher, and the mother and her easy writing abilities too evident her creative abilities. Furthermore, her mother indicated her interests and talents in flower making too. Her teacher said she is a good speaker as well as a leader. Both peers and the teacher have nominated

her for items leader and speaker, as well as for many other socio-affective and interpersonal characteristics such as counselor, stimulator and spokesman. Her parents rated her in upper range in social abilities. Therefore, she is a multitalented child. Chanu shows her awareness on her talents, by nominating herself for all these talents. According to her mother, she is an emotional girl. Teacher indicated with all her talents, she is hot tempered; she gets angry even for a slight thing.

Tharindu (MA15)

During the dynamic assessment, Tharindu scored in the 75th percentile band at the pre-test. After the intervention, he was able to achieve in 90th percentile band indicating his giftedness (his RSPM mark in the post-test is 46, and 47 is the cutoff mark for 95th percentile band). He has scored 51 for Sinhalese language and 78 for Mathematics. He is a gifted underachiever. Neither peer nominations nor the teacher nominations or parents' ratings indicate her academic giftedness. However, Tharindu nominated himself for all the items of academic domain.

Tharindu's mother and father are educated up to GCE (O/L). Farther is a mason. Mother is a dress maker. Tharindu has an elder sister in the GCE (A/L)-Grade 12 class of the same school.

Tharindu started to walk and talk before his first birthday. According to the mother when he was very small, he was very good in his studies. Now, he is trying to play around with the children in neighbourhood in the rest of the day after the school and during the weekends. Their house is open to a common garden to which many other houses are open too. Since the children in all these houses, play around throughout the day it is very difficult to his parents to engage him in studies.

Parents send him to a private tuition class but he neglected the work in that class too. He says the work in the tuition class is too difficult. When he is at home he tries to mend any broken things, such as his toys even the bicycles. Parents said he has creative abilities. Parents have rated him to a higher range in creative abilities. The teacher mentioned, in spite of his low achievements in academic work he is very good and keen on creative work. He brings all the materials to the class for creative work when teacher ask to bring them. He never forgets a single thing. When teacher asked him to do any handwork at home he brings them completed in good quality. Most of the time he brings more than one item of the same handwork even the teacher expected one.

Mother said he sometimes help her in the housework too. Not only has that he likes to help even others. His mother and sister both are helping him in his studies even though he is not progressing.

According to the teacher, his weakness in subjects is relating with his inability of writing. Most occasions he gives correct answers verbally, and even in difficult sums in Mathematics. Teacher said she is trying her best to help him. However, it is not an easy task as he refuses to work. According to the teacher another problem with him is he cannot stay in his seat even for five minutes. He walks all over the class while others are working. Once teacher has given him the class monitorship, but he has failed to do it properly. Now teacher had made him the assistant monitor of the class. He encourages others to copy work from each other. His books and as well as his work is very untidy, even the books are not in order. Teacher said he is very much like to play. He tries to finish the work carelessly and hurry to play even during the class working hours. The parents admit his work was careless and untidy even when he was in lower Grades.

Unlike many other parents, his parents are very keen on his studies, and come to school for any meeting as well as for any activity. They are the class representatives too.

Tharindu's version on his studies,

My parents, and elder sister help me in my class work. But I don't like remain in one place and do the same work. I feel boring to do work like that. I like to switch on to a new task very soon. But, I like to do creative work for long hours. I like to repair most of the broken items such as toys, clocks and even the bicycle at my home than doing studies.

Tharindu mentioned that he likes animals very much. He has a pet cat, and he said he feeds him every day before going to school. In addition he said he likes to help others (his mother also mentioned that), and he takes food for his poor friends in the class (those who are from orphanages). Tharindu has nominated himself for most of the items in Form A of PTNS forms except for items in drama category. In addition, he has nominated him for items Sociable, Tireless (item in physical category), and item Dancer in Form B. His mother too mentioned about his dancing talents, but neither peers nor the teacher has nominated him for item dancer. However, teacher has

nominated him for items in physical sub groups and 1 item of socio-affective sub group.

Tharindu demonstrates a mix of creative, gifted and underachieving characteristics.

Malshika (MB34)

Malshika is in the 55th percentile band in RSPM pre test, but she was able to reach the 98th percentile band in post-test obtaining 51 marks for RSPM test. Her achievement test marks in Mathematics and Sinhalese language are 50 and 34 respectively, this shows she is an underachieving child when compared with her RSPM score level. Since he has reached the 98th percentile band after the intervention, she is an ‘invisible gifted underachiever’. She is in the 5th position in academic talents by peer nominations. Teacher also has not nominated her for any item in academic subgroup. Nevertheless, the parents rated her to the higher range in intellectual domains and academic fields on the parent rating scales.

Malshika’s Mother is educated up to Grade 9 and father is up to GCE (O/L). Father is a three-wheeler driver. Mother is working as a doll-maker in a small factory that exports dolls. She has a sister at pre school age. Mother and father are both have no time to look after her studies. Mother is busy with the younger daughter when she returns home after work. Parents find that Malshika is weak in her studies. Her mother said they have no time to help her in studies. Mother further said that they send her for tuition in all the subjects including English. An elderly girl resides in their neighbourhood takes her to the tuition class, and helps in her studies too. In the heavy rainy days, she goes to school even the parent’s try to stop her as she is keen in scholarship examination and she does not want to miss the schoolwork. She composes poems and stories and some times draw pictures that match with her poem or story. She loves animals but do not pet them as she scared of them. She loves the plants and trees too. She does not even pluck a flower, other than to offer Lord Buddha. She even does not allow others to pluck flowers or break trees and plants. She likes to keep a collection of preserved flowers and leaves, but she collect flowers and leaves when only they are detached from the trees. She has a strong belief that plucking flowers and breaking and cutting trees and plants are wrong behaviours. She is very inquisitive about stars and star patterns on the sky and always asks questions about them.

According to the teacher, her parents spend little attention on her. They come to school very seldom. They never come to the parents meetings. She is a slow working

girl. She never tries to do work on her own, but always ask for help from others. Nevertheless, she likes to take leadership in other activities in the class. She has received the fourth nominations for the item leader from peers. Further, she has received 1st nomination and 2nd nominations for items spokesman and counselor from peers. Teacher too has nominated her for these two items. In addition, teacher has nominated her for items sociable and spokesman too. Her parents too rated her for a higher rank in social domain. Furthermore, the teacher has nominated her for item comedian of drama category and peers have nominated her for item actor in drama category. These indicate her talents in drama. The parents said that she composes stories and poems at home, but the teacher has not noticed such remarkable ability at school. Teacher indicates she has talents at dancing. Malshika has self-nominated for item dancer, also received the 4th nomination from peers for the same item. Malshika said, her mother and father are very busy, and they have no time to help her in her studies but some times, she gets help from the neighbourhood sister. Her mother also some times helps her when she is free. She further said, that she is attending to tuition classes for all the subjects, but still she find difficulties in some sections of subjects. She likes Mathematics very much, but she said that she has difficulties in Mathematics too. She further mentioned she likes to go to school daily rather than being at home, as there is nobody else at home other than the neighbourhood sister and she feels lonely at home. Malshika does not have many friends. She likes her friends very much. She said they help me in my studies too.

School M - The teachers' and principal's views on the identification process

The two class teachers said, considering the backgrounds of the parents of this school, it is very difficult to get support from the parents. The parents want to educate their children well, in order to give them a better life than what they experience, but they have no time and they are not much educated. Therefore, to promote this type of identification program the teachers have to take the complete responsibility. Teachers further said, with the other activities, it is very difficult to find time to engage in this type of work. Presently, they are maintaining individual records on student progress (but there is doubt whether they make any use of them). The researcher explains, if they keep the records updated and do more careful observations on children it is not difficult for them to identify students. They admitted that. Teachers are already doing extra work for the weak children in the class. The major difficulty to keep them after

school, since the parents and the students both are keen in scholarship examination teachers cannot keep the children after school. Not only is that, results of the scholarship examination is one of the measurements of progress of the teacher's too. Therefore, teachers have to do more work targeted to scholarship exam in school time. They stated, most of the students are stressed with this examination. Finally, the teachers said if the parents are given an awareness of the importance of identifying their gifts and provide provisions, they would show a positive response on this. They further said if they can get parents' cooperation, the task would be much easier.

According to the principal, it is very difficult to get help from the parents. She further said since all of them are highly suffering from financial problems, and most of them are earning money on a daily paid basis, it is very difficult to get down to school during the weekdays. Not only the fathers, because of the financial problems most of the mothers too go for daily paid work such as helpers in houses. She further said because of their backgrounds, the students are also not very interested in studies. Principal said she can get the cooperation from the staff, but it is a little difficult to get the support from the parents. Not even the half of the parents of a class attends to class meetings, but she believes, if the parents have given a strong awareness about the importance of identifying and providing special provisions of the gifted children, they will show a positive response on this. Principal believe it is highly depend on the class teachers to gain the parents support.

6.6.2.3 Case study on School K

This is a Type 2 mix school. It has classes only up to GCE (O/L). The school is in a village area about 45 kilometers away from Colombo city. The students of the families of higher and lower middle classes of this area manage to admit to the National schools in the close by cities or semi urban areas. Therefore, the majority of the students attending to this school are belonging to the families of low socio-economic backgrounds. Compared to national schools and other 1AB and 1C schools this school has minimum physical facilities and human facilities. However, the school has minimum facilities like desks, chairs, Black board, small cupboard and a teacher Table in each classroom. The environment experienced by the students of this school is different from the environment experience by the students of School M even though the students of both schools are belong to low socio-economic backgrounds. This is the parental village of most of the students of School K. Therefore, they have a garden

surrounding their homes and they have relatives close by to their homes. Further, they have a natural environment, such as small jungles or paddy fields, surrounding them.

Gimhani (KA15)

Gimhani is in the upper limit of 98th percentile band in RSPM score in pretest (53 marks for RSPM test). This indicates her very high cognitive development to her age. Not only that her achievement test marks 98 and 100 in Mathematics and Sinhalese language respectively indicated that she has reached an achievement level expected from her RSPM scores. She is a gifted higher achiever. She has received 1st, 2nd and 3rd nominations for items encyclopaedia, bright idea and both lightning and scientist respectively. These items are belonging to academic subgroup. Further, she has been rated by parents to be in the gifted range for both the intellectual domain and academic fields in the parent rating scales. Gimhani has self-nominated for three items of academic subgroup except for the item encyclopaedia. She has scored 86 for Mathematics in above- level test.

Gimhani's parents are not much educated. Her mother studied up to GCE (O/L), but failed the examination; she works as a labourer in a welding workshop and gets a very low income. Her father studied up to Grade 8. He is hiring a three-wheeler (a taxi service used by low socio-economical class and middle class people). Their family income is very low just enough to survive (since her father hiring the three-wheeler in the village seldom he gets a high income). Gimhani has an elder brother; according to the mother, the brother too was very good in his studies when he was small. Nobody in the mother's or father's family has done higher studies. Most of them studied only up to GCE (O/L).

Gimhani has started to talk well, before her first birthday. From a young age, she has drawn pictures and has liked to dance. She started to write letters and read books when she was in the Pre School. Gimhani is very social from her age, and she has many friends. She loves her friends, but tries to go beyond them in schoolwork. She always compares her marks with others.

She does her studies well. She is a self- motivated girl. She has a very good memory power Mother helps her in studies. She is good in all the subjects. She can even give speeches in English. She has no relatives or neighbours to help her in studies other than the mother. The owner of the mother's workshop some times buys books for her. In addition to the school, she attends to a tuition class aiming the scholarship

examination. Her mother said, "I try my best to help her to achieve a higher level in studies that we could not achieve." Parents buy her storybooks and educational newspapers to read. Since there is no body at home, mother takes her to her work place after the school. She does her homework as well as other studies there. Mother helps Gimhani in her studies while she is in the workshop (the owner of the workshop is a kind person, therefore he does not show objection on this) She returned home about 5.30 in the evening with the mother. At home, she likes to watch Television. Parents take her on educational trips when they can afford. Her mother said, "She can understand our difficulties and she is adjusted to our life."

Gimhani can advise others. Some times, she advises even the mother and the elder brother. When she wants to take a decision, she inquires from mother but she can do the right decision. She is a girl who can tolerate difficulties and face problems. Once her head was injured, and she has not cried even when the doctor sutured the wound. Gimhani is a kindhearted girl. She has sympathy over the beggars and the old people. In leisure hours, she does drawings, but she is not very good in creative work. Her peers have offered her the 1st and 2nd nominations in the items artist and craftsmen, and 2nd nomination in item handy man, which highlighted her talents in visual art and creative work. Parents also rated her in upper range in artistic domain. Even though, the mother does not highlighted her talents in creative work parents have nominated her in higher range in creative domain. Gimhani has not nominated herself for creative abilities, but nominated her for abilities in visual art. Teacher has not nominated her for visual art or creative abilities, but the teacher said she is talented in many aspects other than sports. Neither teacher nor peers have nominated her for sports. Mother also said she is not good in sports. Her mother said she is fond of music and she is clever in dancing from her pre school age. Her peers have nominated her to 1st place in item dancer and 2nd place in item singer. Teacher too has nominated her for the same items and Gimhani has self-nominated for both items. The teacher said Gimhani is a very good child in many aspects. She is a charming and quiet child. Her parents are also same as her. She gets on well with the other children. She likes to take the leadership and she is very capable of that. Sometimes, she gives speeches in the school assembly. She has received peer nominations for items leader and spokesman and as well as for items sociable and speaker. Her teacher too has nominated her for items leader, spokesman and speaker.

Teacher added that her parents are very keen on her studies. Even though, they have financial problems they do every thing on child's education. Mother brings her to school daily and most of the days she inquire about the Gimhani's studies from the teacher, and she comes to all class meetings.

Gimhani said she is studying hard to be a doctor, so that she can help people. She very much appreciated her mother's support on her studies. She said she has a special place to study and a Table and a chair too. She keeps her storybooks on one side and school books on the other side of the Table. Gimhani has a special interest in studying atlases. She looks for the rivers and mountains of many countries and tries to keep in her memory. In addition, she has a hobby on collecting stamps and information on nature especially on animals and birds. She said 'I like to talk with animals, and I wish how well if they can talk too. Some times, I am enjoying talking with parrots'. Gimhani is a peculiar girl with lot of talents, special characteristics and interests.

Bimantha (K8)

Bimantha was in 80th (42) percentile band in RSPM scores in pretest. Nevertheless, he scored 43 in the far test even though he was not in the experimental group but in the control group. Teacher recommended including him to the case study sample, as he was good in his studies earlier and recently she has observed a turn down in his studies. However, his achievement test marks in Mathematics and Sinhalese language is 52 and 45 respectively. This shows his low achievement to his cognitive ability. He is a gifted underachiever. Neither peers nor the teacher has nominated him for any item in academic subgroup. Bimantha did not nominated himself except for item scientist in academic subgroup. Nevertheless, the parents have rated him to be in the higher range in the intellectual domains and in academic fields.

Bimantha's mother is educated up to Grade 3, and she is a housewife. His father educated up to GCE (O/L), and he is a three-wheeler driver. Bimantha has a four-year-old younger sister. According to his father, Bimantha started to talk before his first birthday. At preschool age, he was able to read books. He does not like to go to tuition classes; therefore, the parents teach him. His mother also looks after his studies (but mother studied up to Grade 3). When the father comes back home from his work he helps him in his studies. However, by the time, he returns home it is night and therefore there is little time to help him. Most of the time he tries to does his work on

his own. A person who works in a private factory boards in their home. He too helps him in his studies. Father buys him educational newspapers and books to read.

He is a boy who used to attend school happily. Now he shows a dislike towards school and towards the tuition classes. The reason for this is, because his father's brother is a peanut vendor in a Sunday fair in that village, the senior students of the school bullying and insulting him, calling him 'Rata Kadjja' which means 'a pea-nut'. According to his father there is a turn down in his studies. Teacher always says he is good in his studies but he is slow in his work. Father said he believed that because he is slow in all his daily activities, such as taking food and washing.

Father indicated he likes to engage in creative activities, especially with metals. Some times, he advises the parents on such work. He likes to do cycling as well as driving. He likes to do artwork too. He is not a much forward boy. He does not like to associate many. He has very limited friends. He could bear pain (once he fall down from a tree and injured seriously, but he did not cry).

Teacher said that, even though he looks innocent, he is not an innocent boy. He fights with peers and even some times hit the peers, and he is a tough boy. He never gets disappointed when the teacher scolded him. In addition, he is a boy who can do work well. He can read very well. Nevertheless, do not write properly on the line. The parents have no time to pay much attention on this child. He is very interested on creative work. Teacher said his Grade 1 & 2 class teacher said he was very good in his studies when he was in her classes (This teacher has become the class teacher from the last term of year 3 when the former year three teacher has transferred to another school). The teacher further said, 'I am trying my best to make him interested and motivated on studies'.

Bimantha said his father helps him in studies, but since he is busy he hardly get a time to help me. An uncle boarding in his house helps him with his studies. He does not like to go to tuition classes (when the researcher asked for a reason, he did not reply). His favourite subject is Environmental related activities. He likes to observe the nature, as he can learn a lot related to subject Environmental related activities, which help him to answer the questions related to the subject. He said he is able to learn well when he sees natural things. He has a habit of collecting dry leaves. Sometimes he dries the fresh leaves and preserves them, and later he creates artworks using them.

He likes to make things using clay. In addition, he does repair the radios some time. He said he has a habit of separating objects it into pieces and see how it is formed, and fixed it again. I do not like Mathematics as it is little difficult for me, but I like additions in Mathematics. Bimanth's teacher has nominated him for handy man and mechanical-technical items. This highlighted his abilities in creative work. Parents also had placed him in a high rank in creative abilities in PIP forms. Bimantha too has given self-nominations on items handy man and mechanic too. However, peers have not nominated him for any item. He likes to read storybooks too. His father as well as the uncle in his house brings him books. When the researcher asked whether he likes to come to school, he did not reply it at once, but said, "I like to come to school but also like to stay at home". This shows his dislike to school. When the researcher asked the reason for his like to coming to school, he said to get knowledge. He said he has few friends at school, and do not like to have many friends. "At home I play with my sister. I like to do studies and also like to be free."

School K - The teacher's and principal's views on the identification process

The teacher mentioned that all the students attend to this school is from poor families.. Nevertheless, they are supportive. She further said, with her experience, for a teacher it is not a difficult to get support from parents. The parent's only ambition is to give a good education to their children and to get good marks for their children in scholarship examination. She believed it would not be difficult to get support from them in identification process or to organize any intervention programs or any other extra work for their gifted children, even after school hours. The teacher has already started some intervention programs for weak children, and gives more work to children who finish their work before others. Teacher said she strongly believed that if they started such program at the beginning of the year children would more benefit to get through the scholarship examination too.

The researcher also experienced co-operation from the parents of this school. All except the parents of two children returned PIP forms on time. These two children are frequently absent from the school.

The principal is new to this school, she has already started new projects to up grade the educational level of the students with the help of the teachers. She said the class teacher of Grade four has already started an intervention program for weak children. The children in this school are from very poor families, but the parents are interested

very much in their education. Since most of the mothers are none working, it is not difficult to get parental support for any program that benefits their children. The principal further added that she could take the responsibility of implementing an identification program, similar to that which researcher conducted. She further said she has confidence that her staff will take responsibility of implementing such a program in school.

6.6.2.4 Case study on School L

The environment experienced by this school is similar to School K. It is because the both schools are situated in the same village. The two schools are close by. Unlike School K, this school is a Type 3 School, which has classes up to primary level. Parents in the village prefer to admit their children to School K rather than to this school because the School K has classes up to GCE (O/L). The socio-economical backgrounds experienced by the families of children attending to this school are similar to that of School K. The physical resources in this school are very limited. There are no parallel classes, and there are only four classrooms even though there are five primary Grades. This is because Grade three and Grade four are sharing the same classroom. There is only one building in the school. Recently it has started to build another building to accommodate more classrooms. There is a small library and a small room used by the principle as her office. No pipe born water, but there is a well in the corner of the school garden. However, there are about 20-22 children in each Grade, and school provides minimum facilities for them to get their education.

Chamal (LA9)

Chamal is in the 90th percentile band in RSPM score in pretest. This indicates his high cognitive development to her age. Not only that his achievement test marks 93 and 90 in Mathematics and Sinhalese language respectively indicated that he has reached an achievement level expected from his RSPM scores. He is a gifted higher achiever. He has received 1st nominations for all the items of academic subgroup. He has received all the teacher nominations for academic subgroup. His parents had also nominated him to a higher rank in the intellectual domain and in academic fields in PIP forms. He too has nominated him for item lightning in academic subgroup.

However, he has not nominated him for any other items of this subgroup.

Chamal's mother educated up to GCE (O/L) and father educated up to GCE (A/L).

Father is a clerical servant in a government office. Mother is a housewife. According

to the mother Chamal has started to talk before one year. Parents have noticed Chamal's competencies in academic areas from his early years of life. Especially he has a good memory power. Neither paternal nor maternal brothers nor sisters are educated. They had given up their studies without doing higher studies due to their parents' financial problems and are still helping their parents. Chamal's first cousins too are studying well.

Mother said apart from the academic subjects Chamal is good at art, singing as well as in sports, and also has average talents in dancing (she stated one of Chamal's cousin's sister too is very good at dancing). However, neither peer nor teacher has nominated him for dancing abilities. The reason may be that as the mother indicated his average talent in dancing, may not visible to a significant level to notice by peers. In the PIP forms, the parents rated him to a higher rank in artistic ability. Teacher and the peers too have nominated him for item singing, which denotes his remarkable abilities in the area of singing. Chamal too has nominated himself for item singer. Peers have nominated him for item artist too, but neither teacher nor Chamal has nominated himself for item artistic. Nevertheless, teacher talked about his high artistic abilities during the interview. Mother too indicated that he is good in English language and takes part in English competitions too.

Mother said, 'From his early age he is very creative.' Anytime when he is free he tries to make some new thing especially with wires and batteries. Teacher also agreed with his creative abilities. Teacher said, 'some times he composes Sinhalese poems in the class within a short time period'. Both the teacher and peers have nominated him for creative abilities like craftsman, mechanical-technical (all the items in this subgroup), and artist. This highlighted his creative abilities too.

Chamal is a very inquisitive boy. Especially about the environment; he ask lot of questions when he wants to clarify things. Once a year his parents take him to see important and historical places in the country. He likes to read. Parents bought him books. Since his parents would like to send him to a National school in city, they send him to a private tuition class aiming the scholarship examination.

Chamal's favourite subject is Mathematics, and his next favourite subject is Sinhalese language, but he said he likes the subject environmental related activities too. He further said, 'while observing the environment I can learn many things related to this subject. I enjoy observing the nature. I feel very sorry when I see dead birds and

animals'. Also he said he feel sorry when the parents are ill. Chamal appreciate his parents' help in his studies. He said his mother teaches him at home and father bought him books and newspapers. He has a separate place to work at home.

Chamal reveals many information about himself. He said:

I like to do art. I like to draw incidents like 'early morning', 'sun rise', as well as 'sun set', 'rain' and 'jungle'. In addition, I like to do hand work and make new things. I can compose Sinhalese poems. I compose them at school and home (When the researcher ask him to recite a poem he has composed, he recited a poem. That poem was on some sweet little birds that come for a particular fruit. When researcher asked whether he had seen the birds, he said, 'Yes, they come to my garden. But I have not seen the particular fruit (it is a wild fruit) but I have read in story books that these birds are fond of that fruit'.

This shows his imagination power as well as how he absorbs knowledge from reading and from the environment.

I like to play cricket and I am in the school cricket team. I like acting as well as singing. However, at school I get rare opportunities to do acting as I am ask to do singing in most of the items in school variety entertainments. I like my school, but since there are classes only up to Grade five I have to go to a secondary school to continue my studies. Therefore, I try to do well in Grade five scholarship examinations aiming for a good school.

When the researcher asked whether he is hot tempered, he said, 'No, but if somebody hits me I too hit him'.

In the class, he can take leadership; he is the class monitor from Grade 1. Teacher said he could take his own decisions about his matters. Further teacher added, both the mother and the father have a great interest on his studies. Mother always come to the school and inquire about Chamal. He is a highly sociable boy, and get on well with all the peers. He has many friends. He is a self-motivated boy. He always helps me in most of my work too. He can advise the peers and can control them. He has high leadership qualities too. Teacher has nominated him for items in interpersonal categories, also peers too have nominated him for same categories. This confirms his social abilities. Both peers and teacher has nominated him for few items in physical abilities, and he himself too. During the interview, Chamal also talked about his physical abilities. Teacher concluded that he is a talented boy in most areas.

Thrimashi (LA20)

Thrimashi is in 95th percentile band in RSPM scores in posttest. She scored only 24 marks for the pretest, and she was in 25th percentile band in pretest. Since she scored very high RSPM scores after the in the intervention; her giftedness visible only after the intervention. However, her achievement test marks Mathematics and Sinhalese language is 53 and 47 respectively. Therefore, she is an invisible gifted underachiever. Her peers have nominated her for items scientist and lightning (academic domain) to 2nd and 3rd place. Teacher too has nominated her for item bright ideas which is too an item in academic domain. This shows even though he has not scored in Mathematics and Sinhalese she displays some talent in academic areas. Thrimashi has not nominated her for any item in academic domain. The parents do not have rated him to a higher range in the intellectual domain and in academic fields in PIP forms.

Her mother and father were both educated up to GCE (O/L). The mother is a housewife while her father is a peon (a helper in an office) in the Parliament office. They have five children, four boys and Thrimashi is their only daughter. According to the mother, she had started to walk and talk when she is just 7 months. She is having a good memory power from her very small age. They said, in spite of his good memory power she is not getting good marks in schoolwork. They send her to a private tuition class aiming the scholarship examination. However, the highest mark scored in this class is 60.

The mother further said that she admits that she gets very little support from home. Her father comes home at night and he rarely has time to help her. Even though the mother is at home, she heavily engaged in house work of five children and therefore she hardly gets a free time to help Thrimashi in her studies. Nevertheless, parents buy her books and educational newspaper as a support for her studies. She is a girl who likes to go to school daily. At home, she does imitate her class teacher and does teaching too. She has told her mother during the intervention, she has found it easy to answer the test items when the researcher explains and clarifies the reasons for the correct answers, and she has told when she get practice on several intervention items it was not difficult for her.

She is good at singing music and dancing. Mother said these talents are rooted in other children in the family too. Their 2nd son has received certificates for art in many

competitions. 3rd son is good at music and singing and he has won gold medals in some competitions. Not only that 3rd son is good in his studies too and he manages to hold 2nd position in the class test. Thrimashi's father has a good talent in art and craft, and he does crafting work in addition to his job and it gives them an additional income. Mother said, "She is a quiet girl, and not a stubborn girl. She likes to play in groups."

Thrimashi's favourite subject is Mathematics. 'Some time I got about 85 marks for Mathematics in my tuition class (contrast to mothers version). My next favourite subject is Sinhalese. I like to do group work rather than my own work'. When the researcher asks her whether she is able to answer when teacher raises questions, she said hardly and as a reason for that, she said she is reluctant to reply when she is not sure whether she is correct. She likes to do dancing and singing very much. Her peers too have nominated her for 4th position in these talents. She too had self-nominated for her in these talents. She likes flowers very much and gets hurt when she sees animals and birds are in pain. 'I love my grandmother very much as she brought me lots of things.'

Teacher said she is a good and kind girl. She is a slow working girl. She only does any work when teacher asked to do. She does not answer very much when the teacher raises questions from the class. Some times, she is good in her work, also she shows more productive work when she does group work rather than she works in her own. Nevertheless, she is good in music, singing and dancing. However, the teacher has not nominated her for these areas in PTSN forms. Teacher further added, her parents are good and supportive to the class activities. Nevertheless, the teacher doubt that her mother is neglecting this child as she has five children, and the 5th child is younger to Thrimashi and he is 3 years old.

School L - Teacher's and principal's views on identification process

The class teacher believed it is not difficult to get the cooperation from parents in any programs in gifted children. Most of the mothers in this school come to the school daily with their children. Only a few mothers go for work. Since the number of students in the class is low, it is not difficult to pay attention on each student to understand their abilities as well as special characteristics or any weaknesses. Teachers already maintain records on their progress as well as their characteristics and other information.

According to the principal, the school was once an abandoned school. Since most of the children try to go to the city school or a Type 2 School (School K in the sample) close by, each year there were very few applicants to this school. The Ministry of Education sent the present principal to develop this school. This is her 3rd year. Now there are about 20-22 children in each class and there are classes up to Grade 5. Presently a construction of a new building is taking place in order to have more parallel classes.

It is very easy to get cooperation from the parents to this kind of program as they are very keen on their children's education. Additionally, most mothers are non-working and they daily come to the school with their children. Since there are very few children in our classrooms it is not difficult to pay special attention on children to identify their strengths, weakness as well as behaviours. Principal further stated that she has already advice the teachers to pay attention to the children according to their needs. Once we started this kind of program it will be a new experience for teachers and parents both, and I strongly believe we can identify gifted children at any level and provide provision. Even though the parents are keen on scholarship examination, we can introduce this as a help for the children. I think it is better to start identification at the beginning of the Grade four then we see more children will get through the scholarship exam too. Since our children are in the same class from year one, at the beginning of Grade four they know each other very well especially because, there are few children in the classroom.

By careful examination on case studies, it is clear that majority of the parents have awareness on their children's characteristics, behaviours, talents, their weakness and strengths. Majority of the parents interview data were matched with the data they revealed by PIP forms. Some parents, even though they cannot name the weakness or strengths in their children specifically, they have identified them generally. For example Thrimashi's mother (School L), highlighted about her daughter has started to talk and walk early and she has a good memory power. Such characteristics are signs of giftedness (Thrimashi is a gifted underachiever).

Summary

In most instances, all the schools the teacher's interview data matched with their nominations for the PTSN forms. Similarly, except for few students most of the self-nominations were matched with their parents and teacher's interview data or parents' responses to rating forms and teacher's responses to nominations forms and with the data revealed by peers during peer nominations. Finally, in general there was a consistency in the data revealed by parents, teachers, peers and student themselves on abilities, weaknesses and many other characteristics of the particular students. However, there were instances where only one party has identified particular characteristics. For example, teacher has identified Chanu as a hot-tempered girl (School M), but parents did not comment on that. Parents were able to reveal information on of the interests and hobbies of their children, which some of them the teacher has not mentioned. Furthermore, there were instances where only the student mentioned his talents or interests.

Chapter 7

Discussion, Conclusions and Recommendations

CHAPTER 7: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The broad aim of the present study was to develop an appropriate identification model to identify gifted and talented students in the primary level school system of Sri Lanka, with special emphasis on intellectually and academically gifted and talented students.

The objectives of this study were to:

1. identify the effectiveness of achievement test scores in identifying academically or intellectually gifted and talented students, including gifted underachievers and invisible underachievers, in Primary Grade level schools in Sri Lanka.
2. investigate the effectiveness of Raven's Standard Progressive Matrices (RSPM) test and Dynamic Testing to identify intellectually or academically gifted and talented students, including gifted underachievers and invisible underachievers.
3. examine the effectiveness of employing Gagné's Peer, Teacher and Self-Nomination forms (PTSNFs) in identifying gifts and multi-talents, including intellectually or academically gifted and talented students, gifted underachievers and invisible underachievers in primary Grade level schools in Sri Lanka.
4. investigate the effectiveness of parents in identifying gifts and multi-talents, including intellectually or academically gifted and talented students, gifted underachievers and invisible underachievers in primary Grade level students in Sri Lanka.
5. examine the extent to which above-level testing might be used to identify the gifted students who need further educational challenge beyond their Grade level in primary Grade level schools in Sri Lanka.
6. propose a model that would be appropriate to identify intellectually or academically gifted and talented students in primary Grade level schools in Sri Lanka.

About 450 Students of Colombo district (of the Western Province) from schools, types 1AB National School, type 1C, type 2 and type 3, of different socio-economical backgrounds were included in the sample. The instruments of data collection for Objectives 1 to 5 were achievement test scores, Raven's Standard Progressive Matrices test, Gagné's Tracking Talents Forms A & B (which cover teacher, peer and self nominations), Rogers' Parent Inventory for finding Potential, and the Sri Lankan Grade five scholarship examination paper. The quantitative data were supported by qualitative data collected through interviews of selected students, parents and teachers for Objective 6.

In chapter six, the data collected for different Objectives were presented and analysed to identify the relevance, reliability and validity of the each method to identify the gifted and talented students in primary level education in Sri Lanka. In this chapter, the focus is on discussing the effectiveness of each method, to decide on the appropriate methods that could be incorporated in the expected model. In addition, the researcher will recommend suitable strategies for the teacher to get maximum benefits during the implementation of the proposed model. Further, the conclusions suggested from the current study, recommendations for improvements to the proposed identification model and proposed future research will be presented at the end of this chapter.

7.2 Discussion of the Findings for Objective 1 and Objective 2: Results Based on Achievement Test marks and RSPM Test Marks

The researcher identified the top 10 percent of talented students in the areas of Mathematics and Sinhalese language during the analysis of the data collected for Objective 1. Collectively, about 14.10 % of the sample were academically talented (67 out of 475 students, see Table 6.3). However, since the achievement tests administered to the sample were teacher made tests and the tests administered in different schools were different, this percentage would not be fully accurate, but could be considered as approximate values. Nevertheless, Merrick and Targett (2004) revealed, that any teacher-made assessment, which has benchmarks, could be considered as a teacher-made assessment for identification. Therefore, it could be predicted that the teacher-made tests used to identify the achievements of the student sample in the current study would have provided a fair judgment to some extent. However, as the research literature suggests (Davis & Rimm, 2004; Merrick &

Targett, 2004) like standardized tests, achievement tests also may not identify gifted underachievers as the language and content of ability achievement tests are biased against culturally and economically deprived students. Therefore, it is doubtful whether the above 14. % identified by achievement test marks would represent the complete gifted and talented population of the sample in the study.

In the data analysis for Objective 2 stage-1 (see section 6.2.1 of chapter 6) the top 10 percent of the students (52 students) were identified as intellectually gifted. The researcher compared the results of the data analyses for Objective 1 and Objective 2 stage-1. She observed that most of the individuals represented in the student group selected as gifted by RSPM for the data analysis for Objective 2 stage-1 does not represent the top 10 percent of students selected as academically talented by achievement tests marks under the data analysis for Objective 1 (see the Table 7.1 below).

Table 7.1 Illustration of the number of academically talented students and intellectually gifted students in each school (Out of 52 intellectually gifted students only 20 are in the academically talented pool).

| | Sch J | Sch k | Sch L | Sch M | Total |
|--|-------|-------|-------|-------|-------|
| Total number of academically Gifted students identified by achievement tests | 53 | 3 | 8 | 8 | 67 |
| Total number of students identified as gifted by RSPM | 44 | 2 | 4 | 4 | 52 |
| Total number of students identified as gifted by RSPM and achievement tests | 16 | 1 | 1 | 2 | 20 |

There are two noteworthy points here. First, out of the 67 students identified to be academically talented by achievement test scores, only 20 were identified to be intellectually gifted by RSPM testing. Second, out of 52 students identified as intellectually gifted, only 20 were identified as academically talented. This is clearer when comparing the data in Table 6.3 and Table 6.4 (Tables A7.1.1 and A7.1.2. in Appendix 7.1 provide more details also see Tables 6.3 and 6.4 in section 6.2.1)

The students who were in the top 10 percent of the gifted group of the sample scored on or above the 90th percentile band in RSPM testing (RSPM test). Since RSPM is a non-verbal test, the researcher expected the academically talented students might score on or above the 90th percentile band. This may be unexpected because it is

often assumed that those who show high marks in an academic subject are gifted. However, the reason for this discrepancy is that students can be mildly gifted or with average intellectual abilities, but develop their academic skills to their maximum level. Such students may show higher marks in academic tests than the gifted students who have not developed their academic skills to the maximum of their ability level. Additionally, the literature on the gifted and talented revealed that talents (for example the academically talented) progressively emerge from the transformation of high aptitudes into well-trained skills characteristics of a particular field of human activity (Gagné, 2003). In this situation, the aptitudes are in the intellectual domains and the corresponding field of human activity is academic talents. Therefore, the researcher expected that the academically talented students would show giftedness in the intellectual domain.

It was a surprise to see that 7 students who were in the 25th percentile band in the RSPM test were also identified as academically talented (Table A7.1.1). When the results of their achievement tests were examined, out of these 7 students only one student (JE27) achieved in the Mathematics test and all the others achieved in the Sinhalese language test only. Additionally, they scored less than 85 marks (in-between 80-84) for that subject. Also, the number of nominations received from other sources (Appendix 6.14 & summarised in Table A7.1.1) was low compared to the other students (see the Table A7.1.1). Further, it was observed that the majority of other students (Table A7.1.1) who achieved in both the Mathematics and Sinhalese language subjects or achieved in Mathematics only, received more nominations from other sources (Appendix 6.14 and summarised in Table A7.1. 1). Furthermore, they achieved higher percentile bands compared to the other students in the Table A7.1.1. For example, out of 18 such students 12 achieved the 85th percentile band, three achieved the 80th percentile band, but the student JC19, who scored 99 in Mathematics and 88 in Sinhalese language, was in the 60th percentile band.

It could be argued that these disparities could be due to the incompatibility of norms. Nevertheless, by the RSPM test marks, 52 students already scored on or above the 90th percentile band. Therefore, it could not be due to the incompatibility of norms. Another possible reason for this situation could be the emotional and physical situation of the students at the time of the test administration and could be due the weaknesses of the test administration procedure or may be their lack of familiarity of the test items. In addition, some of the students may have been supported by parents,

could be highly motivated and hard working, or influenced by other means (catalysts, as explained by Gagné, 2003, and discussed in Chapter 3) to achieve that level of academic talent. However, some of these students were included in the experimental and control groups during the stage 2 of data collection for Objective 3 (the results discussed for stage 2 of the presentation and analysis of data for Objective 2). Most of the students scored at the 85th percentile band or above (e.g. JA44, MA29, KA18, KA4, and KA22).

In addition to the above reasons, the researcher predicted that excluding both the high aptitudes in intellectual domains and the influence of catalysts, there could be some other underlying factors that supported the emergence of high talents in academic areas in the students who possess average or low intellectual giftedness. Such factors could not be identified by the data analysis of the present study, but may be identified through further studies.

The achievement test marks, percentile bands and the number of nominations received by 20 students who scored at the top 10% of the intellectually gifted and who are academically talented too are displayed in Table A7.1.2. Of these, 14 students showed talents in both subjects. Two of them received two other nominations, one received three other nominations, and two more received four other nominations. Of the other six students (out of 20), two were talented in Sinhalese and the other four were talented in Mathematics. Three out of four Mathematically talented students received four to five nominations. The other one received two nominations. Two students talented in the Sinhalese language received only two nominations. Hence, a majority of the identified students (Table A7.1.2) possessed both intellectual gifts and academic talents. In addition, the majority of the students who received more than 3 other nominations were students who showed talents in Mathematics or who scored high marks in either subject. Further, these results revealed that, the majority of the students who were talented in Mathematics or both the subjects and who showed talents with high marks in Sinhalese language also showed high intellectual giftedness.

In addition, when the marks gained by the students categorized in the Tables 7A.1.1 and 7A1.2, were examined some of the students in Table A7.1.1 (who are not in the top10 percent of the intellectually gifted group by RSPM testing) scored marks in achievement tests similar to the students in the Table A7.1.2. This is significant, especially for the students who are in the 80th and 85th percentile bands in Table

7.1.2. The results suggest that the gifted or academically talented group show many discrepancies even though they are all collectively 'gifted and talented'.

To summarising the above situations among the individuals of the sample (Tables A7.1.1 and A7.1.2), one way or another, the measured intellectual potential is not always reflected in the achievement level. That is, the measured intellectual potential may be higher than, or indeed lower than, the achievement level of the student. This phenomenon could be explained by Gagné's (2003) differentiated model which explains the influence of the various catalysts in talent development. Additionally, as understood by this model, the level of the acquired talents could vary according to the extent of interaction and intensity of the interactions, resulting in a mixed group of gifted individuals (or discrepancies among gifted and talented individuals) like highly gifted, moderately gifted or mildly gifted as revealed by Gagné (2003) and Gross (2004).

In addition, could it be that it is not simply a development of academic talent, but that intellectual potential could be influenced by the catalysts? For example, intellectual potential was measured using dynamic testing, administered by an intervention and non-verbal post-test and far post-tests. Consequently, differences between pre-test marks and post-test or far post-test marks could indicate an increase in intellectual potential (Sternberg & Grigorenko, 2002). After all, Gagné's model is a developmental model, and there could well be a feedback mechanism having an effect on the natural ability or potential of the individual student (Ziegler & Heller, 2000). From another perspective, could the process of the intervention as a catalyst provide the capacity to identify the full potential that already exists (Chaffey, 2002b). Further research may address these questions.

Out of 52 intellectually gifted students, only 20 were identified as academically talented. This suggests that more than 60% of the intellectually gifted students are underachieving. This situation is discussed in the next section in more detail.

Finally, it is understood that neither achievement test marks nor non-verbal tests alone were able to identify the complete pool of gifted students from the sample (Appendix 6.12).

7.2.1 Presence of Gifted Underachievers and Gifted Higher Achievers in the Sample

In the previous section, it was identified that about 60 % of gifted students identified in Objective 2 stage 1 did not demonstrate their giftedness in the academic subject areas of Mathematics and Sinhalese. Therefore, they were not identified as gifted in Objective 1. These are the students who are gifted (have the potential to be academically talented), but whose academic talents are not developed, hence they do not show achievements in school subjects to a significant level, as they do not score well in achievement tests. Especially when their verbal abilities (language) are not developed to a considerable level, so they cannot show their abilities in most of the other academic areas. Nevertheless, when they were administered non-verbal tests, which do not need verbal abilities to understand or answer the test items, and when they have exceptional cognitive abilities, they could easily score marks and demonstrate their giftedness in intellectual areas. In the literature on the gifted and talented these types of individuals are known as gifted underachievers.

The underachievers of the sample includes 28 out of 44 gifted students from School J, two out of four gifted students from School M, and one out of two gifted students from both schools, K and L. According to the above statistics, about 63.63 % of gifted students are underachievers in School J, being a prestigious school and students with mixed socio-economic backgrounds. However, compared to School J, schools K and L, which are rural schools with almost all the students from low socio-economic backgrounds, only 50% of gifted students are underachieving. In School M, a semi-urban school in which most of the students are from very low socio-economic backgrounds about 50% of the gifted students are underachievers. The Carnegie Corporation's (1996) report *Years of Promise* highlighted the seriousness of the underachievement problem in the United States (Davis & Rimm, 2004). The report suggested that underachievement is not a crisis of a certain group, it is not limited to the poor, but it is a crisis of many middle class and upper-income students too. Gross (1994) and Jackson and Peterson (2003) too claimed social and emotional issues may cause underachievement of highly gifted students. Such issues can be common to any socio-economic background. Consequently, it is not a surprise to identify gifted underachievers in every school in the sample of study independent of the school type, or the backgrounds of the students who attend to them.

Further, out of 52 gifted students, 29 were boys and 23 were girls. Out of the 32 underachievers, 21 were boys and 11 were girls. Therefore, when RSPM scores were compared with achievement marks more boys are underachieving than girls. This is not a special situation limited to this sample as the research literature also revealed that gifted girls in primary Grades outperform boys in all areas of academic achievement (Kerr, 2000). Likewise, at another national level assessment of achievement of Grade four students in Sri Lanka, the same situation was observed, that the girls were leading boys in achievement at primary level education in Sri Lanka (Perera et al. 2004).

During the data analysis of stage 2 for Objective 2, it was observed that dynamic testing helped to identify more underachievers that are gifted (another set of 23 students were identified as gifted by dynamic testing). The significant increases in scores after the intervention confirmed that the students in the experimental group performed below their level of potential at pre-test (before the intervention the gifted percentage of the experimental group was 7.14, after the intervention it was 41%). This evidenced that their zone of proximal development enclosed a considerable number of undeveloped functions (proximal development is discussed in chapter 4 under Section 4.5.1 Dynamic testing) before the intervention. The increase of post-test and far post-test marks of some students in the experimental group suggests that cognitive modifiability, based on the intertwined concept of the zone of Proximal Development (Vygotsky, 1974) and cognitive modifiability (Tzureil & Feuerstein, 1992), had occurred within them during the intervention. Further, the mean values of the posttests and far posttest showed the relative stability and reliability of the cognitive changes that occurred during the intervention. Therefore, it is observed that dynamic testing successfully improved the cognitive variables measured by RSPM testing and thus the dynamic process could be used to identify students who have a potential in giftedness (are gifted). Further, these 23 underachievers were not visible as underachievers by pre-test marks and it is only after the intervention they were identified as gifted, therefore they are called ‘invisible gifted underachievers’; Furthermore, the 23 gifted underachievers were identified only out of 56 of the sample (out of the targeted group of 56). More research is needed on invisible underachievers in the Sri Lankan educational context. Since the sample was nearly 450 it could be predicted that nearly half of the sample might have been invisible gifted underachievers. In addition, invisible underachievers were common in all four

types of schools (Table 6.6). This outcome suggests that the country's education system should pay immediate attention to the primary education level to identify this category of students and steps should be taken for their intervention.

Apart from the presence of gifted underachievers, according to the analysed data in Table 6.5, intellectually gifted students exist in all four schools in spite of the backgrounds of the school. Backgrounds experienced by almost all the students who attend School K, L and M are low socio-economic, compared to backgrounds of the students (mixed socio-economical backgrounds) who attend the School J which is a semi urban national school in Sri Lanka, regarded as one of the prestigious mixed schools in the western province of Sri Lanka.

When comparing the percentages of intellectually gifted students against the student numbers in each school²⁰, the percentage of gifted students in School J is a little higher than School K and L which are the schools in a rural area of western province. All the students attending these two schools belong to very low socio-economic backgrounds. School M has the lowest percentage of gifted students, which is also in a semi urban area the same as School J. However, the students who attend School M are from very low socio-economic backgrounds, even worse than the background experiences of students from School K and L.

Furthermore, Gimhani (discussed under section 6.6.4), who is a student studying in School K and from a low socio-economic background, started reading and writing at preschool age and started to talk before her first birthday. She scored in the 98th percentile band in the RSPM test and scored 98 marks for Mathematics and 100 marks for the Sinhalese Language. She also scored 86 marks for Sinhalese language and 70 marks for Mathematics in the above-level test, demonstrating her abilities in academic work in one class above her age. However, further exploration would be needed to clarify the extent of Gimhani's high potential.

Those findings give some evidence to the existence of intellectually gifted and academically talented students (in different levels) and gifted underachievers (the

²⁰ **Percentages of students in each school in the sample,**

School J = $349/450 \times 100 = 78\%$ School K = $19/450 \times 100 = 4\%$
School L = $19/450 \times 100 = 4\%$ School M = $63/450 \times 100 = 14\%$

Percentages of intellectually gifted students in each school in the gifted sample

School J = $44/52 \times 100 = 84.6\%$ School K = $19/450 \times 100 = 4\%$
School L = $2/52 \times 100 = 3.8\%$ School M = $63/450 \times 100 = 8\%$

students who have potential to be talented) including invisible gifted underachievers in the primary level education system of Sri Lanka. In addition, the magnitude of their existence is independent from the socio-economic backgrounds of the students, as well as the background of the schools in which they are studying (for example, according to the above discussion, more gifted underachievers as well as more intellectually gifted students were found in School J).

7.3 Discussion of the Findings for Objectives 3, 4, 5, and 6

Peers, teachers, parents and the students themselves were able to identify gifts or talents in intellectual domains or academic areas in many students for Objectives 3 and 4. In addition, they too identified many gifts and talents in several other areas and domains in many students in the sample. Detailed analyses of the data collected for each Objective are presented under the relevant Objective in chapter 6. Furthermore, the researcher carried out a triangulation of all the data at stage 1 and stage 2 of section 6.6.1. During the triangulation, the validity of each method used was identified. The findings suggested that each method had validity to a level that was acceptable enough to introduce it to the final identification model.

7.3.1 Peer nominations

Considering the students identified as intellectually gifted or academically talented by peers, it was clear (Appendix 6.13) that 6 students out of 61 students who were identified by peers were not identified by either the RSPM test or achievement marks as gifted or talented. Similarly, peers were not able to identify nearly 56 students identified as gifted or talented either by RSPM tests or achievement test marks. Thirty-four students identified as gifted or talented by the teacher were not identified by peer nominations. In the same manner, peers overlooked 40 students identified by parents. However, as analysed in section 6.6.1 some of the overlooked peer, teacher and parent nominations were matched with the results of three other criteria including achievement test marks, RSPM tests or by dynamic testing. As discussed in Section 6.6.1, there were agreements as well as disagreements between the results of the analyses of data collected by all the identification criteria. Finally, only six peer nominations did not match with any other criteria (discussed in Section 6.6.1). In most cases, inter-peer agreement was apparent in peer nominations.

7.3.2 Parent nominations

Further, by careful examination through case studies, it is clear that a majority of the parents have awareness of their children's characteristics, behaviours, talents, weaknesses and strengths. The majority of the parents' interview data were matched with the data revealed in the PIP forms. Some parents, even though they could not name the weakness or strengths or talents in their students specifically, identified them generally. For example, Thrimashi is a gifted underachiever of School L, and her mother highlighted that her daughter started to talk and walk early and that she has a good memory. Such characteristics are signs of giftedness. Merrick and Targett (2004) too highlighted that 'significant areas of advanced development can be readily observed in young children and it is the parent who is the keeper of this information'. It was also observed that most of the parents were able to recognise multiple talents in their children. Feldhusen and Jin (2002) also highlighted this situation. Further, it was found that the higher developmental level of most of the high achieving gifted students could be at least partially explained by parental involvement in their children's education. During the case studies, it was seen that the parents' help, especially the mother's help, was a crucial factor for the development of talents. Many students in the sample benefited from their mother's attention, which helped develop higher achievement. In addition, many of the gifted underachievers were the students who were neglected by the parents (see Section 6.6.2, revealed during the interviews - e.g. Malshika of School M). This gives an indication of the importance of the involvement of parents in gifted and talented identification and in the development of cognitive abilities. However, not only parental involvement but also intrapersonal factors such as student self-motivation and their ambitions were also identified in some students (Saduni and Gimhani) as reasons for their higher achievements. Similarly, physical factors like bad health conditions, provided reasons for underachievement in some children (Pasidu and Madushica).

It can be reasonably concluded here that if the parents are made more aware of the characteristics of gifted and talented students, given more skills and knowledge in identifying these characteristics and linking these with the process of identification as well as the cognitive development of their children, they will contribute to this phenomenon in a more productive way. However, approximately 70% parents (out of the 400 parents who attended the initial parents meeting) returned the completed PIP

forms. When the researcher had informal discussions with parents the researcher identified that some parents had difficulty in responding to the PIP form as it was too long and took a long time to complete (51 items were in PIP form), which may explain why nearly 30% of the parent forms were not returned.

7.3.3 *Teacher nominations*

In most instances, teachers' interview data were matched with their nominations for the PTSN forms. Furthermore, the teacher capabilities of identifying giftedness and talents in intellectual domains as well as in other domains were examined under analysis of data collected for Objective 3 (see Section 6.3.2). Except in School J, in all the other schools the teachers' success in nominating gifted and talented students for all the domains included in the study were in the range of 50% - 91.60%, which matched with the first three peer nominations (who were selected as 1st, 2nd and 3rd in item scores). The item scores were calculated using the number of peer nominations received by each student for each item. The student who received the highest number of peer nominations was 1st in the item scores too). The teachers' of School J had the capability of 51.% and 54.% in identifying gifts and talents in academic and interpersonal domains respectively. The researcher believed that one of the major reasons for low percentages in identifying ability by teachers of School J was the large number of students in individual classes (student numbers ranged from 45-49 in each class). However, when the teacher nominations that matched with the first four peer nominations were considered, an increase in these percentages was observed (Table 6.19).

In general, the teachers in the sample showed the highest capability in identifying interpersonal abilities and academic abilities. Further, a majority of them showed the least capability in identifying physical abilities. This may be because students frequently show their capabilities in academic and interpersonal domains in the classrooms, and physical abilities in the playground. Therefore, teachers are much more aware of interpersonal abilities and academic abilities than physical abilities. A similar situation was observed in a previous study by Cardinal (cited in Gagné, 1999, p. 63). In Cardinal's study, out of four items in the academic domain 3 items showed a higher peer versus teacher correlation compared to most of the other items in form A of the PTSN forms used in the study. Similarly, in Cardinal's study regarding the interpersonal domain, except the item sociable, the items leader, spokesman and

speaker, showed high peer versus teacher correlation compared to most of the other items in form B of the PTSN forms used in the study (however, the highest correlation was shown in the items Hercules and musician in form A in Cardinal's study). In general, teachers in the sample of the present study showed the third highest capability in nominating their students in the music domain. Further, in the present study the effectiveness of the teacher in nominating to each item of the academic domain was examined and the results show a similar situation identified in Cardinal's study (see Section 6.3.1 p. 155)²¹.

Furthermore, as examined during the data analysis for Objective 3 (section 6.3) in general there was no gender bias towards boys in peer or teacher nominations, in spite of the higher number of boys in the sample compared to girls. However, teacher nominations were a little biased towards the girls, compared with the percentages of the boys and girls in the sample. So, the researcher believed, if there is any bias towards boys by peers, this situation will help to compensate teacher bias. In such instances teacher nominations may help in identifying gifted and talented girls that may be overlooked by peer nominations.

Despite the criticisms of teachers' capacity to accurately nominate gifted and talented students (Trost, 2000; Davis & Rimm, 2004), the researcher generalised that primary teachers in the Sri Lankan school system are able to identify gifted and talented students in their classrooms with average or more than average effectiveness. Davis and Rimm (2004) criticized teachers' bias in selecting teacher-pleasing students. Nevertheless, in the present study, out of 78 teacher nominations for intellectual and academic areas only 12 were not identified by any other methods. Out of the other 66 teacher nominations 41 students were identified by more than two other methods too. This supports the effectiveness of teachers in identifying gifted and talented students, especially, in intellectual or academic areas.

7.3.4 Self nominations

Further, except for a few students, most of the self-nominations were matched with their parents and teachers' interview data or parents' responses to rating forms and teachers' responses to nominations forms and with the data revealed by peers during peer nominations. Even though the self-nomination of each child was not discussed in

²¹ The results of the present study are, Lightning> Encyclopedia> Scientist> Bright idea. The peer vs teacher coefficients of the Cardinal's study are Lightning = .72 , Encyclopedia = .68, Scientist=.58 , Bright idea=.48

a separate section, the researcher examined the self-nominations under the data analysis for Objective 3 for each school (Appendix 6.8). According to the data, in most classes (except in responding to PTSN- Form B in class J4B and for Form A in class JE (Appendix 6.8 - class JB and JE), the overestimation (over nomination) during self nomination was less than 50 percent (percentages laid between 2% to 50%).

7.3.5 Above-level testing

For Objective 5, the researcher identified the appropriateness of using above level testing to identify academically highly gifted students. Nineteen students were tested by an above-level test (one Grade level above). Eight of them scored more than fifty marks. Two scored more than 85 marks and three scored more than 70. Six students scored more than 65 which was the pass mark for the particular Grade five scholarship examination from which the test items were included in the above-level test paper. This shows the possibility of introducing above level testing to identify academically gifted and talented students from primary level Grades of Sri Lanka (not yet being able to compare with the Grade 5 scholarship examination results).

In general, there was a consistency in the data revealed by the PTSN forms and PIP forms with the interview data of parents, teachers, peers and students themselves on the particular students' abilities, weaknesses and many other characteristics.

However, there were instances where only one participant identified particular characteristics. For example, one teacher identified Chanu as a hot-tempered girl (School M) but her parents did not comment on that. Parents were able to reveal information on the interests and hobbies of their children, which the teacher did not mention. Furthermore, there were instances where the student only mentioned his talents or interests. In such situations, the teacher can discuss the child with the parents as well as peers and the particular child and observe the child and then make a decision on the talent of the student. Davis and Rimm (2004), highlighted that junior and high School Level students with strong artistic, creative or scientific interests tended to mask their talents because of peer pressure, but would self-nominate themselves to participate in special programmes.

More details of the relationships between the analysed data collected by different identification criteria are illustrated in section 6.6.1 in the triangulation of data. A majority of the data collected by any one of the methods were matched with the data

collected by more than one of the other methods. In addition, each method had an average or more than average validity. However, the data analysis showed that if only one method or one or two methods were used to identify the intellectually gifted or academically talented students; this approach would not identify all 195 gifted and talented students from the sample. Also, the effectiveness of each method was identified during the study as discussed above. Therefore, this suggests the appropriateness as well as effectiveness of using multiple methods in identifying intellectually gifted or academically talented primary school students.

Furthermore, data analysis of the PTSN forms and PIP results and data revealed by case studies showed that the parents, teachers, peers and student themselves are capable of identifying other talents like musical, Artistic, Socio-effective, interpersonal, mechanical-technical, drama and physical talents in primary students. Teacher capabilities of identifying these talents were discussed in data analysis for Objective 3 (section 6.3). Additionally, the data analyses of the PTNS forms revealed that peers and teachers had identified 170 students (students only identified by PTNS forms, excluding students identified as intellectually gifted and academically talented by other methods) who possessed talents in many domains, and most of them were multitalented, but there were students who were talented in one domain or area. Some of these multitalented students had gifts or talents in the intellectual or academic area and one or two or many other areas. Some had talents on all measured areas (Section 6.3.2). On average, each of these 170 students had gifts or talents in almost three domains. This suggests the richness of the gifted and talented pool in the primary education system of Sri Lanka. Since, the main focus in the present study was on identification of intellectual giftedness and academic talents, effectiveness of identification methods for identifying other domains of gifts and fields of talents are not discussed in detail within this study.

7.4 Application of the Concept of 360 Degree Assessment in Identifying Gifted and Talented Students

Since the findings of the present study supported the employment of multiple methods for identifying giftedness and talented in students of primary level of Sri Lanka, the researcher explored the feasibility of incorporating the ‘360 degree feedback system’ to assess giftedness and talents in primary students. The 360 degree feedback system is quite familiar to the corporate world today (Rao, 2005; York & Wise, 2004). The

360 degree feedback system is also called the 'Multi-rater Feedback System' or 'Multi-source feedback' or 'Full circle feedback'. As these names suggest, the candidate is assessed periodically (once in one or two years and sometimes, even every six months) by a number of assessors including his boss, direct reports (subordinates), colleagues, peers, internal customers and vendors. The candidate's self-assessment is used to draw comparisons between his/her ratings given to him by other assessors. Most successful organizations use multi-source assessment or 360 degree feedback to enhance the leadership competencies and effectiveness of their employees (Rao, 2005).

Further, Rao (2005) explains the flexibility of using this tool beyond the corporate world. For example, the Indian school of Business (ISB) introduced 360 degree assessment to assess students. In this study, the assessment tool was finalized by reviewing 14 different tools constructed by 14 different groups of students themselves. Rao highlighted the usefulness of the feedback to the students as well as the recommendations they received together with this novel experience. The exercise helped the students identify and recognise the impact they were having on each other. It also helped specify behaviour patterns that could enhance their effectiveness. The most appreciated part, however, was the fact that such sensitive and essential data were elicited in the most non-threatening manner that facilitated learning throughout the process (Rao, 2005, pp 201-207).

As a business organization collects data from different sources around the employers of the organization to get 360 degree feedback as mentioned above, there is a possibility of applying the same multi-source feedback in identifying gifted and talented students in the school as an organization of education. In the present study, the researcher used many different methods to identify giftedness and talent. Several factors, identified as some of the critical success factors of 360 degree feedback by York and Wise (2004), are present in the current study. For example, for the instruction 'obtain solicited feedback from individuals who have worked with a particular individual for at least 4-6 months' (York & Wise, 2004), consider the individuals in the present study, such as peers and teachers who have known each and every student for more than 2 years or sometimes for 4 years as they studied in the same class for 2-4 together, and parents have known them for nine years (in Sri Lanka, this is the situation for all primary Grades). Again, for the instruction 'be sure the people you ask to provide feedback are capable of answering the survey questions

and they should have knowledge of behaviours and actions in the situations addressed by your questions' (York & Wise, 2004), consider the students involved in the present study who understood the statements in the forms. The other two parties, the parents (since the education up to age 14 is compulsory in Sri Lanka, most instances at least one parent may be educated to understand the simple statements in the forms) and the teachers were capable of understanding the statements. The researcher clearly identified that all the parties had knowledge of behaviours and actions in the situations addressed by the statements in the tools.

During the present study it was also identified that the majority of the participants in the present study showed a considerable interest in the identification process. The researcher identified this feature during interviews, during the nomination process, within the informal discussions with all the parties and also by observing their behaviours during the study. Further, the principals of the schools too showed positive attitudes towards such identification processes in their schools, as well as offered their fullest support within the implementation process. The researcher believed these factors suggest the practicability of using this type of nomination in the future.

Therefore, the researcher is confident that the intended identification model could be introduced as a modified 360 degree model and feedback system in identifying gifted and talented students from the primary education system of Sri Lanka.

†

7.5 Proposed Identification Model

Results of the data analyses of research Objectives 1 to 6 revealed that no single method identified all the gifted students in the group. However, the findings of the current study supported a more appropriate identification process involving the use of the following multiple methods in identifying gifted and talented students from primary level school system of Sri Lanka: achievement test marks, non verbal RSPM test results, dynamic testing, peer nominations, teacher nominations, parent nominations, self-nominations and above level testing. Of these methods, above level testing could be administered only to the identified higher achievers. Also dynamic testing could be used only with the remaining students who had not been selected by any other method. Finally, this could be introduced as 360 degree model for identification of gifted and talented students in the primary Grade levels, as illustrated in Figure 7.1.

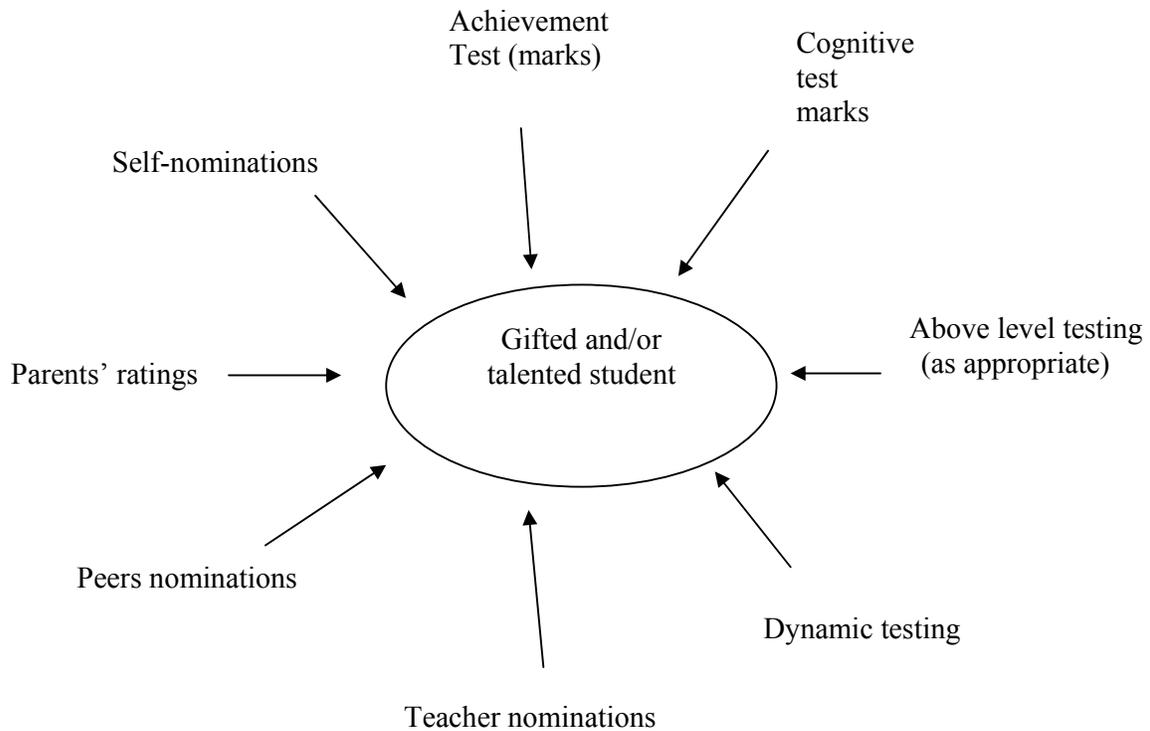


Figure 7.1 360-degree model for identification of gifted/talented students in primary Grade levels

However, in the cooperate world; one of the purposes of the 360 degree feedback system is to give feedback to the assessed candidate to enhance his capabilities and to correct weaknesses. In this model the feedback is received by the teacher who is the key person who implements the model (see figure 7.2)

Such a process of feedback to the teacher from different sources is because the teacher is the person who has to make use of the results of the different nominations. For example, the teacher should use the feedback to provide feedback to the student, parents and significant others who work together to support the development of the students. A teacher can also make use of the feedback in different ways such as,

1. The data analysis suggests that it is very rarely that a student could be identified by using these methods combined: teacher, peer, parents nominations, RSPM test and achievement test (only 8 out of 198 students were identified by all these methods, see Appendix 6.14). Therefore, the researcher

suggests, teachers do not need to use all these three particular methods to decide on a student as being gifted or talented.

2. If a particular student is nominated by many different sources, giftedness in the measured area should be accepted (sources such as peers, teachers, achievement test marks etc.)
3. Student received only a few nominations, and then the teacher can discuss the individuals' gifts or talents with parents, peers and with the student too and then make the decisions.
4. If it is only a self-nomination, then the teacher can discuss with the relevant student, parents and the peers about the talents and can monitor the student's abilities and behaviours for a particular period before making a decision.
5. In both the 3rd and 4th instances above, sometimes such students can be gifted underachievers. Therefore, teachers should use the feedback very carefully when making decisions. In the case of academic underachievers teachers' should provide opportunities for students to undergo the dynamic testing process for a certain period and retest for intellectual giftedness (this should be done by a trained person). Further, such students should be provided with continuous assistance by the school with the collaboration of the parents.
6. Sometimes this type of feedback would be useful to identify the average abilities in the students' not just giftedness. Sometimes the peers, parents and student themselves might misinterpret average abilities as giftedness or talent. Teachers can decide on such students by observing, monitoring and discussing with significant students, parents and peers.
7. As in the corporate world, the 360 degree feedback model that gives them feedback for their development assesses the candidates periodically. Teachers could assess their students by this model once or twice a year, especially as talent development (Gagné, 2003), is dependent on many external catalysts, new developments in any of the domains could occur in a student with the interaction of the many catalysts during the learning process. In the present study, several catalysts that affect the talent development process (discussed in section 7.2) were identified. Therefore, changes in those catalysts or any other unidentified catalysts could cause changes in the development of talents

throughout the learning process. In brief, as understood by Gagné's DMGT model (2003) talent development is a dynamic process, and therefore, assessing giftedness and talents should be an ongoing dynamic process to identify new talents and achievement levels (i.e. development) of existing talents

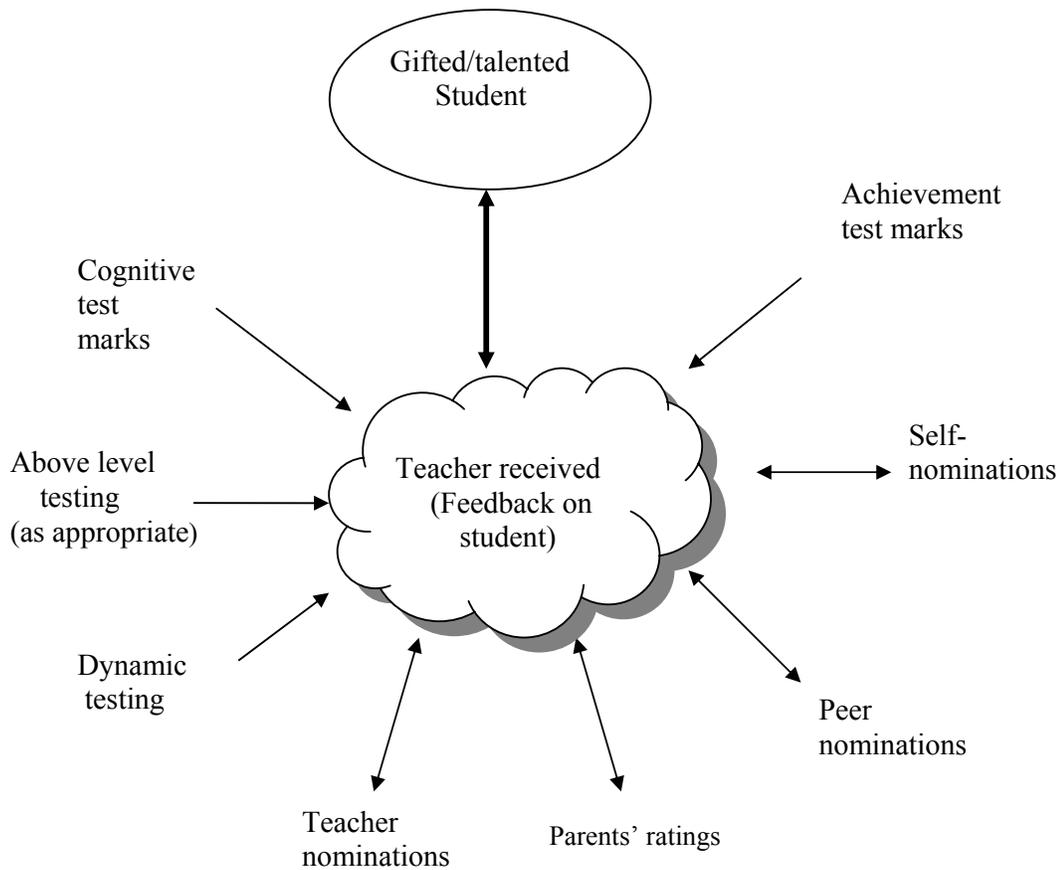


Figure 7.2 360 degree feedback from different sources about the student

7.6 Limitations of the Study

By reviewing the relevant literature researcher identified several limitations indicated by the previous studies on identification of gifted children. Also, she further identified limitations within the methodology of the current study. Such limitations would have an affect on the validity of the study as well as on the process of generalizing the findings to the complete primary education system of Sri Lanka. Following are some of the limitations found in research literature and within the methodology of the current study.

Teachers' attitudes towards the study, as well as the teacher bias towards teacher pleasers (Davis & Rimm, 2004) could affect the results gathered through teacher nomination forms. Rimm & Davis (2004) point out those bright underachievers, bright disruptive students and unconventional creative students could be overlooked by teachers. Gagné (1999) indicated that teachers are not always very good of assessing abilities that rarely exhibited in the school environment. However, since the study is mainly focused on to academic giftedness and talented this issue would not have much affected to the results of the current study.

Parents' overestimation or underestimation of their children may also affect the results (Trost, 2000). Johnson and Lewman (1990) revealed doubts on parental perception of giftedness. Similarly, a tendency to nominate best friends, popular students, underestimation, overestimation of peers and themselves, and students' inability in reading and understanding the concepts used in nomination forms, could also affect the results (Rimm, 1991b). Also prompting by the students during the nominations, would affect to the responses of the students to the Tracking Talent Forms A and B.

When considering the limitations within the methodology, the achievement test marks, which obtained from the class records, are the results of class tests. These tests were not standardized tests. However, since these test marks are expected to triangulate with the findings of other methods researcher believed that any issues regarding non-standardization of tests could be identified. The researcher was not able to identify any research data regarding validity and reliability of PIP Forms used to collect data from parents. She believed that the issue regarding validity would have little affect on the current study since the data collected under all the research objectives are expected to be triangulated at the end of the data analysis. The data collected from 326 parents were included in the final data analysis of PIP forms.

During the data analysis if it is found that the information revealed from PIP forms are very much deviate from the information revealed from the other methods the validity of the PIP forms are questionable.

From the researcher's experiences, she believed that parents' attitudes, parents' education, and their socio-economical backgrounds would have an effect on their responses to the rating scales. However, since there were parents from every level of socio-economical backgrounds the researcher believes it will not very much affect when generalizing the results. The researcher expected to include 462 parents to the sample, as she believed this would help to include more parents from all socio-economical backgrounds. However, nearly 326 parents (70%) had responded to the PIP forms. These numbers exceed more than half of the parent sample of each school except in one school in which the responded parents number was equal to the half of the sample. Therefore, the researcher expected that the information generated from PIP forms could be generalized at the end of the research.

Students' psychological status as well as the physical status might affect the responding to PTNS forms, RSPM test and dynamic testing. The socio-economical backgrounds, home environment and social environment experienced by the students may affect the responses to these tests. Since there are about 462 students from all different socio-economical backgrounds, home environments and social environments is included in the sample researcher believed the results of the data analysis of the study could be generalize to primary education system of Sri Lanka.

The limitations, the delimitations, and the assumptions of the study were discussed under section 5.2.2. The reason for selecting the sample and the possibility of generalizing the results based on these delimitations were discussed (see section 5.2.2).

Finally, the above discussion exposes the fact that there are several limitations and delimitations regarding methods and data collecting instruments. Since all of the findings collected under each method (using different instruments) were triangulated in the study, the validity of each method was identified before generalizing the results to the target population, the primary level of education of Sri Lanka. Further, due to the above limitations the researcher is aware that the findings cannot be fully generalised to the target population.

7.7 Conclusions

The following conclusions were derived from the data analysis and the discussion of the current study.

The findings for Objectives 1–6 suggest that methods such as achievement test marks, nonverbal RSPM tests, teacher nomination, peer nomination, self-nomination and parent nomination are able to identify, intellectually gifted and academically talented students in the primary school system of Sri Lanka to a certain extent (more than average). However, none of these criteria on their own were capable of identifying the whole cohort of gifted or talented students (195 students) from the sample. In particular, dynamic assessment could be used to identify gifted underachievers, including invisible gifted underachievers. Further, it was found that above-level testing could be used to identify highly gifted students who need academic provisions above their Grade level for their age.

The findings of the current study indicated the presence of gifted and talented achievers (who could be highly gifted students, moderately gifted students, or mildly gifted students), and gifted underachievers including invisible underachievers, who are common to all school types (1AB National school, type1C, type 2 and type 3) in the primary education system of Sri Lanka. Further, gifted and talented higher achievers and underachievers were found among the students from all socio-economic backgrounds as well as among the children of parents from different educational levels and occupational levels (revealed by case study data). Richert (2003) emphasizes that the identification (and subsequent programming, planning, provision or intervention) of gifted and talented students should be based on a comprehensive and pluralistic definition that includes diverse potential among all demographic and ethnic groups. Davis and Rimm (2004) highlight also the importance of adopting a clearly defined and broad conception of giftedness. Gagné's (2003) DMGT model has provided the conceptual background for the present study: its pluralistic definition and its talent development mechanism explain the multifaceted nature of giftedness and the expression of talent, supporting the existence of different groups of gifted and talented students with diverse potential in the primary Grade school system of Sri Lanka.

In the Marland (1971) definition, several domains of giftedness other than the intellectual domain were introduced, and some authors have at least applied Gardner's

(1983) concept of multiple intelligences applied to broadening the understanding of the multifaceted nature of giftedness. As well as providing supporting evidence for the existence of different levels of giftedness, the findings of the data analyses for Objective 3 of the present study supported the existence of multitalented students in the primary level education system of Sri Lanka (section 6.3.2). This finding is consistent with the multifaceted nature of giftedness and talent for the population of Sri Lanka.

Peers, teachers, parents and the students themselves have an acceptable ability to identify gifted and talented students in the intellectual domain and in academic areas, as well as in other areas of talent such as arts (visual), music, drama, physical abilities, interpersonal abilities and mechanical-technical talents. However, their abilities to identify these talents seem to vary with different talent areas.

Even though, they were not aware of characteristics of gifted and creative students, some parents were able to reveal several characteristics and talents in their children that could help to infer the child's giftedness, talent or creativeness. Clark (2008) claims that parents are very aware of their child's behaviours, and that they are able to indicate clearly the information relevant to possible giftedness. Merrick and Targett (2004) noted that parents are certainly valuable sources of information about their children. A considerable number of parents who participated in the present study were able to reveal many talents and gifted characteristics about their children. This provides a clearer indication that, if parents in Sri Lanka were provided with the necessary skills and knowledge in the domains of giftedness and talent areas they would more effectively contribute to the identification process.

During the case studies, it was revealed that parental involvement in their child's education (giving moral support, helping with lessons, and providing motivation) was identified as one of the major factors for the development of gifts into talents in their child. This was most significant for academic talents (for example, students J43, JE17, MA29) and was revealed in their case studies. Other causes for higher achievement by students include the student's inner motivation and ambition as well as parental aspirations. Negligence by parents, poor health, monotonous work in the school, home and tuition class, and student preferences for 'creative work' rather than academic work were identified as some of the causes of underachievement by gifted students.

Some teachers are capable of identifying gifted underachieving students with high potential. They were able to highlight some underachieving characteristics of such students even though they are not aware that these characteristics are salient to underachievers. Some teachers showed average capabilities in identifying gifts and talents in many domains and some showed above average capabilities. Therefore, if the teachers are given necessary skills and knowledge in the characteristics associated with the domains of giftedness and fields of talent then they will more effectively contribute to the identification process.

The findings of the current study suggest that about 60 percent of the gifted students in the sample are underachieving. Peter et al. (2000) also note that in their study, nearly 50 percent of the students identified by RSPM tests are academic underachievers. Therefore, the researcher suggests that nonverbal RSPM tests should be used appropriately (as indicated in number 5 in section 7.4) in assisting to identify intellectually gifted students from the primary education system of Sri Lanka.

Furthermore, the findings suggest that, out of the 56 students, 23 students were identified as gifted by dynamic testing. Therefore, dynamic assessment will help to add more underachieving individuals to the gifted and talented group. Consequently, it could be suggested that 'Dynamic testing' is a necessary component of the proposed identification model to identify invisible gifted underachievers present in the primary education level of Sri Lanka.

The results also indicated that, there are a few highly gifted students in the sample who scored high marks in the above-level test. That is, the present study identified the applicability of an above-level test (in this case, a test one Grade above) to identify highly gifted students who need educational provision beyond their Grade level.

When gifted students are assessed for identification purposes using Grade-appropriate tests, the full range of their abilities is not revealed, especially with highly gifted students (Silverman 1998). Above-level testing is a viable solution to this ceiling effect, that is, the lack of an adequate range of difficulty of test items.

The researcher concludes that, rather than use of one or two identification methods, it is necessary to incorporate all of the methods used in the study in order to appropriately identify intellectually gifted and academically talented students. Even though, Richert (2003) suggests that the use of data from a variety of sources can actually be counter-productive to address the issues such as not nominating underachievers to gifted programs, he criticises the use of combination of data from

multiple criteria. However, the NSW Department of Education and Training (2004) acknowledges the importance of using multiple criteria, and highlights that, when as much information is gathered as resources will allow, it is possible to identify a wide range of students and their associated needs. Davis and Rimm (2004) emphasise that the use of multiple criteria should be multiple alternative criteria. That is, they should not be multiple required hurdles to identify giftedness of an individual in different areas of giftedness. Therefore, the researcher believes that even a positive result in one criterion (using such data appropriately as suggested by items 3rd to 7th in section 7.4) may be enough to decide on giftedness of an individual in certain area, though multiple data sources should support this finding.

The emphasis should be on the dynamics and diversity of the on-going nature of identification and feedback within provisional strategies specific to the needs of the individual student. Therefore, when a student is identified as gifted by one or few methods in the model, the teacher should make decisions by on-going monitoring of the particular student and by discussing educational options with the parents and the student. That is, for each identified student, teachers should make use of the on-going feedback mechanism of the model (discussed in section 7.4) so the student can be given special opportunities to demonstrate their giftedness or talent. For example, opportunities provided by the Revolving Door Identification Model (RDIM) (Renzulli, Reis, & Smith, online) in which a talent pool of students receives regular enrichment experiences to develop their giftedness and talents or through the Smith model of dynamic differentiation where myriad opportunities for acceleration and enrichment are provided to maximize student identification, monitoring and learning (Smith, 2006).

The proposed identification model is introduced as 360 degree identification model to identify gifted and talented students from primary level Grades in Sri Lanka. Unlike, the present use of identification methods, which tend to be applied in linear and ad hoc ways, often at simply a classroom level (using one or two criteria together), the proposed model incorporates multiple methods within a dynamic on-going process to identify gifted and talented students and their needs. That is, at the first step the students in the whole class, teachers and the parents all participate in the identification process. If it is to identify intellectually and academically gifted students, the achievement test marks also should be considered. For identifying intellectually gifted and academically talented students, at the second step the students who have not been

identified by any of these methods or any one of these methods, should be identified by a non-verbal RSPM test. Those who are not in the top 10% in RSPM test marks should then be tested by dynamic testing. Testing by RSPM tests and dynamic testing could be carried out at the School Level or state level with the help of specially trained experts. Finally, the students who are in the top 5% in academic achievement should be tested by above level test to identify whether they need any above level educational provisions. However, in the instances where the students have been identified by parents only, the teacher can discuss the child's behaviours and monitor the child for some time, which provides opportunities for the student to demonstrate his or her giftedness, and then the teacher can make a decision. If the teachers can provided with adequate training on identifying gifted students, and made aware of giftedness in parents too, the school system can reduce the number of individuals tested by RSPM tests.

The NSW Department of Education and Training (2004) highlights that the process of identification of gifted and talented students must be dynamic and continuous, allow for identification at any stage of the student's development, and allow for the highly talented to emerge from the larger talented group. This exemplifies that when the dynamic identification process is implemented, students can demonstrate their gifts or talents at any stage of their development. Since this model is implemented at the School Level, the student could be assessed several times as an ongoing process during his or her schooling period. The model could also be implemented throughout the whole school system, which would enable dynamic identification of students throughout their schooling period. Further, this is not only a 360 degree identification model but it is a model which teachers can use to provide on-going feedback from the model effectively to support the continuous development of the student while implementing it as dynamic process (When implementing identification as a dynamic process the class teacher may change. Therefore, it is recommended to keep records of the students to be used by future teachers when necessary).

The researcher concludes that the proposed 360 degree identification model can be used to identify intellectually gifted and academically talented students from primary level Grades in the school system of Sri Lanka. Further, the findings of the present study revealed the effectiveness of peers, parents, and teachers in identifying many other talents in addition to intellectual giftedness and academic talents. Therefore, the researcher proposed the same model could be used to identify multiple domains of

giftedness and fields of talent in primary students in the school system. Further, the researcher proposes few other means that can be used in addition to the methods incorporated in to the 360 degree model. That is student portfolios and nominations from the special teachers such as dancing teachers, art teachers and physical education teachers (if present) to be added to the model to use it to identify multiple talents in the students (Gagné, 1999, p.10) However, this should be further researched. Because Sri Lanka is a country that practices inclusive education, implementing this type of identification model would be very beneficial. Applying this type of model at a classroom level would allow the teachers to identify the achievement levels of students in order to provide for their individual needs. Smith (2006) too highlighted that identification methods and differentiated strategies are also beneficial for all students.

However, teachers would need to be provided with adequate training in gifted education, and develop skills in identifying gifted students and matching the outcomes of identification with provisions appropriate to student learning needs. It is well known that professional development or in-service training, specifically in gifted education, will significantly increase teacher effectiveness (Commonwealth of Australia, 2001; Smith, 2006). Reliability and validity difficulties can be overcome by better acquainting teachers with characteristics of gifted students and by training them to rate and identify gifted and talented students (Davis & Rimm, 2004). Learner centred instructional strategies, for which the teacher acts as a facilitator of learning, are seen to be effective in building personal and social talent in gifted and talented students (Manning & Besnoy, 2008; Smith, 2006). Such situations may also provide the opportunity to support the emergence of giftedness, minimise underachievement of gifted students, and enable the teacher to observe students and more easily identify gifted and talented students at the classroom level. Therefore, the researcher concludes that to implement the proposed 360 degree identification model effectively, primary teachers should be provided with the knowledge and skills of gifted education based on recent literature and research in the field and the identification process.

In Sri Lanka, students come from a broad range of social, economic and cultural backgrounds. Therefore, if gifted education centres are established in Sri Lanka, not all the students would be able to afford their services. Therefore, the responsibility for implementing the model should be at the School Level with the help of the parents.

Sri Lanka is a country that has valued education for many centuries, and the majority of the parents are highly interested in the education of their students. If the education system raises the awareness of parents concerning the importance of identifying and nourishing their gifted students, it would be quite feasible to involve parents in this process. It is certainly the researcher's experience that parents devote their time and money on preparing their students for the Grade 5 scholarship examination in order to provide their child with an opportunity to be educated in a prestigious school (this was reflected in the cases studies too). Admittedly, teachers and students are participants in this 'battle' for a better educational opportunity, but students would benefit from the three parties working together to identify giftedness and talent, and to make adequate provisions. Identification of potential and appropriate provision will benefit many underachievers, who seem to be common in the primary educational system of the country.

7.8 Recommendations

Arising from the findings of this study are recommendations that are presented in two aspects, namely: recommendations to gain maximum results from the proposed identification model; and recommendations for future research.

7.8.1 Recommendations to Gain Maximum Results from the Proposed Identification Model

First, the findings suggest that neither teachers, parents, peers nor the students themselves are capable of nominating gifted and talented students to a high level of accuracy. Therefore, providing in-service training for teachers on the identification process would help to enhance their capabilities for this task. Additionally, using awareness programs, both teachers and peers can be made aware of students' talents as they observe student behaviours in the classroom. This could be started from Grade 1. Teachers can display descriptions of various talents in the classrooms in the form of posters that can be easily read and understand by students and ask them to display their talents in the areas indicated in them and to try to identify the peers who have talents in these areas. The talents indicated in the PTNS forms could be displayed in this manner. However, it is not in the form of nominations but in some attractive and interesting way that could be understand by primary students easily (can display in picture modes too), especially in a manner that motivates the students to display their talents. This will help to identify the talents of the peers, in students themselves and

by the teachers. Additionally, students might be interested in identifying their own talents and displaying their talents in the classroom environment if they feel these characteristics are valued by their teachers and peers (Tomlinson, 2002).

However, this should be done very carefully, so as not to affect the self-esteem of less talented students. Such posters could incorporate multiple forms of intelligence (Gardner, 1983). Therefore, experts in the field with a psychological background should design such posters. Similarly, by providing knowledge and skills through awareness programs for parents to identify their gifted and talented students from their very early years is essential. This should be started at the preschool age or from the first year of the schooling of the child.

Instead of PIP forms, (administered to the parents) including 51 items used in the present study, the researcher suggests using an existing parent nomination form with fewer items, or perhaps the construction of a new rating scale designed specifically for the Sri Lankan context. Further, it is better if these items match with the areas measured by the PTSN forms (but not the same) with elaborations and clear examples for the situations understood by the each item (because informally the researcher learned that the PIP forms used in the study were too long to be responded by the parents). Furthermore, if the students are expected to be identified in the early months of Grade four, parents should be given these forms by at least the middle of Grade 3 and asked to observe the characteristics and skills indicated in the rating scales.

As suggested by the findings, since underachievers are common in the primary education system in Sri Lanka, in addition to nonverbal RSPM tests, the researcher proposes to use another tool to identify gifted underachievers. This could be in the form of available checklists or by modifying the available checklists to identify underachievers (for example, an updated checklist similar to Whitmore, 1980). Such checklists can be used to collect data from parents too by doing modifications appropriately. Indirectly, this would help to draw the attention of teachers and parents towards understanding their gifted underachievers. These checklists too can be incorporated into the model.

Since there are many gifted underachievers in the primary Grade level in Sri Lanka, it is very important to implement programs to reverse underachievement in identified potentially gifted students. The 'Wii Gaay' project is designed to enhance the self-efficacy of the child towards learning tasks to reverse the underachievement of the Aboriginal students in Australia. During this project students continually receive

mastery feedback and scaffolding of information to ensure that they always experience success. In this project, the intervention programs are implemented in two ways, through camps and through on-going support for each child within their school setting, which are intrinsically related (Merrotsoy, 2006). Further, Merrotsoy (2006) highlighted that the initial teacher training provided both theoretical and practical knowledge that could be carried out during the Wii Gaay project. The project aims for the effective identification of Aboriginal students with high academic potential and, second, at reversing academic underachievement by addressing the issues that contributes to it. Sri Lanka can appropriately make use of this methodology to address the issues of underachievers and help teachers to identify underachievers and help to reverse student underachievement in their classrooms.

7.8.2 Recommendations for Future Research.

The researcher suggests carrying out the same research process as the present study by implementing the first couple of suggestions mentioned above as recommendations to get maximum results from the proposed identification model. The effectiveness of the suggestions could be identified by implementing the research with a control group.

Consideration could be given to undertaking the same research as the present study with a smaller sample size to identify factors affecting underachievement as an in-depth study with primary Grade students in Sri Lanka. Additional participants could also include junior secondary level and senior secondary levels of the education system of Sri Lanka.

The researcher suggests more research work is needed to identify catalysts that affect talent development positively or negatively on the primary Grade students of Sri Lanka. Further, research to find out how to identify any other factors other than catalysts in academic talent development is pertinent.

Since the test items of the above-level test carried out in the study was extracted from a past paper of a Grade five scholarship exam, the higher achievement shown by few students could be due to their familiarization with the test items. Therefore, the researcher recommended further research on this with an above-level test paper constructed purely for above-level testing purposes.

Separate research to identify highly gifted and exceptionally gifted students in the education system of Sri Lanka is also needed. Such research could be along the

similar research processes as those used by Gross (2004) who has undertaken multiple and significant studies in this area.

Since it was identified the students are multitalented, it is proposed to carry out a detailed study to identify gifts and talents in other domains other than the intellectual and academic domains of the students of primary students in education system of Sri Lanka.

The present study could be extended by introducing the 360 degree identification model to identify the gifted and talented students from the schools of other educational provinces in Sri Lanka and as well as the Tamil medium schools in Sri Lanka.

It is also recommended to investigate the practicability of implementing the proposed model to identify the gifted and talented students from disadvantaged groups, such as tsunami victims and the students who live in North and East areas of the country where the war exists.

Finally, since, there are many intellectually gifted and academically talented students in the primary level of Sri Lanka as suggested by the findings of the present study, it is important to provide such students with suitable provisions that match with their cognitive levels. Therefore, the researcher suggests to carry out studies on possible interventions that could implemented within the education system of Sri Lanka.

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Appendices

APPENDICES

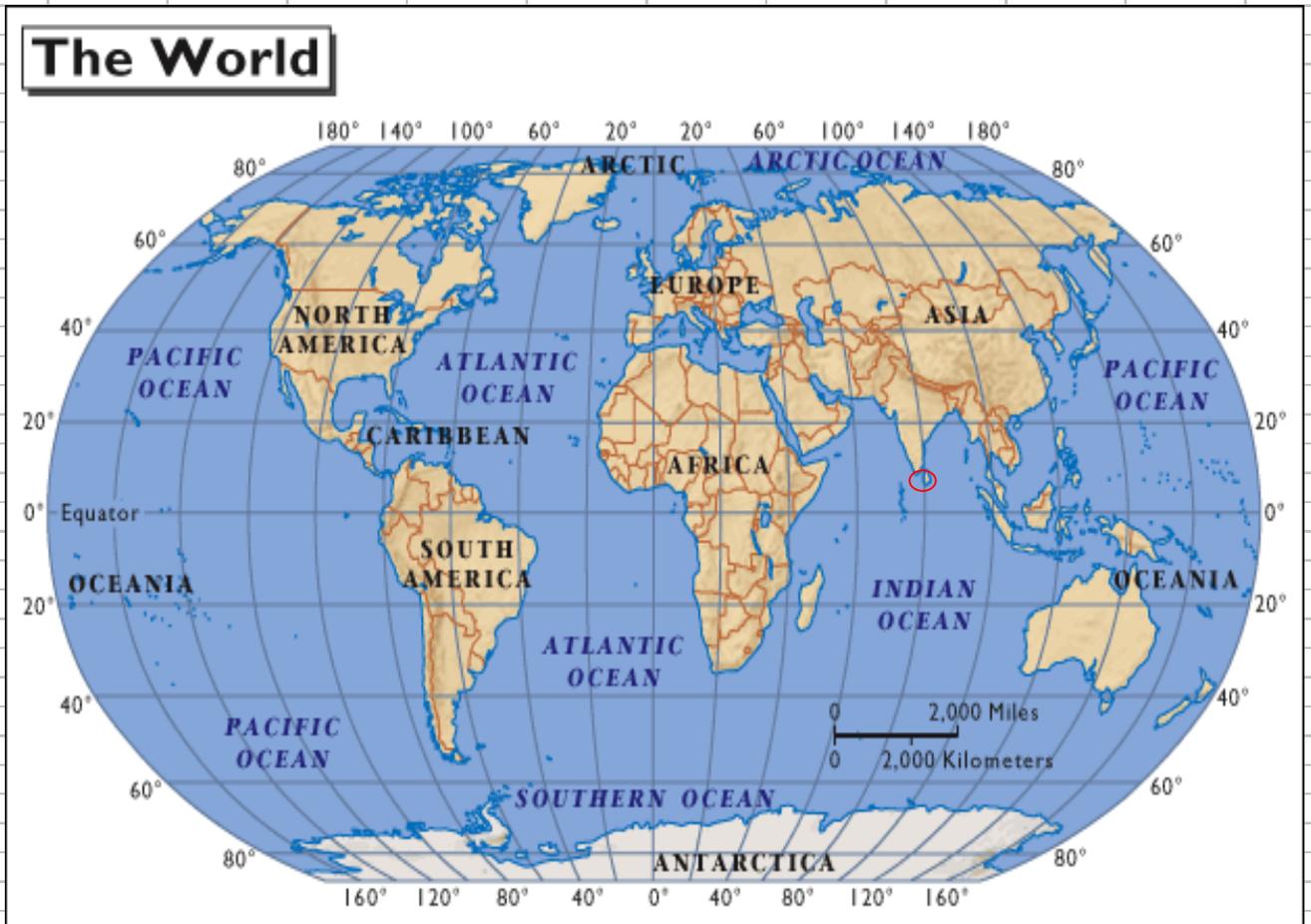
This research work under consideration required collection, tabulation and analysis of large volume of data resulting in preparation of a large number of data sheets which were required for analysis purposes. Though these data sheets are listed in the 'list of Appendices', the researcher was of the view that it would have been inconvenient and impractical to attach all these data analysis sheets. Therefore, the researcher took the liberty of attaching only representative sample data sheets in respect of some analysis where data volumes were large, particularly in respect of Appendices 6.1, 6.2, 6.5 and 6.6, 6.7 and 6.8. However, all data, both in raw form and analyzed form, are kept in a secure filing cabinet by the principal supervisor with his kind consent and permission.

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Appendix 2.1 Sri Lanka in the World Map



Sri Lanka is (an island) situated close to the southeastern tip of the Indian subcontinent. In this map it is inside the red circle. [The World map – Retrieved May 24, 2006, from http://go.hrw.com/atlas/norm_hm/world.htm]

Appendix 2.2 Location of Sri Lanka in the Indian Ocean



Map retrieved May 24, 2006, from
<http://upload.wikimedia.org/wikipedia/commons/8/87/Ce-map.png>

Appendix 2.3 Detailed map of Sri Lanka

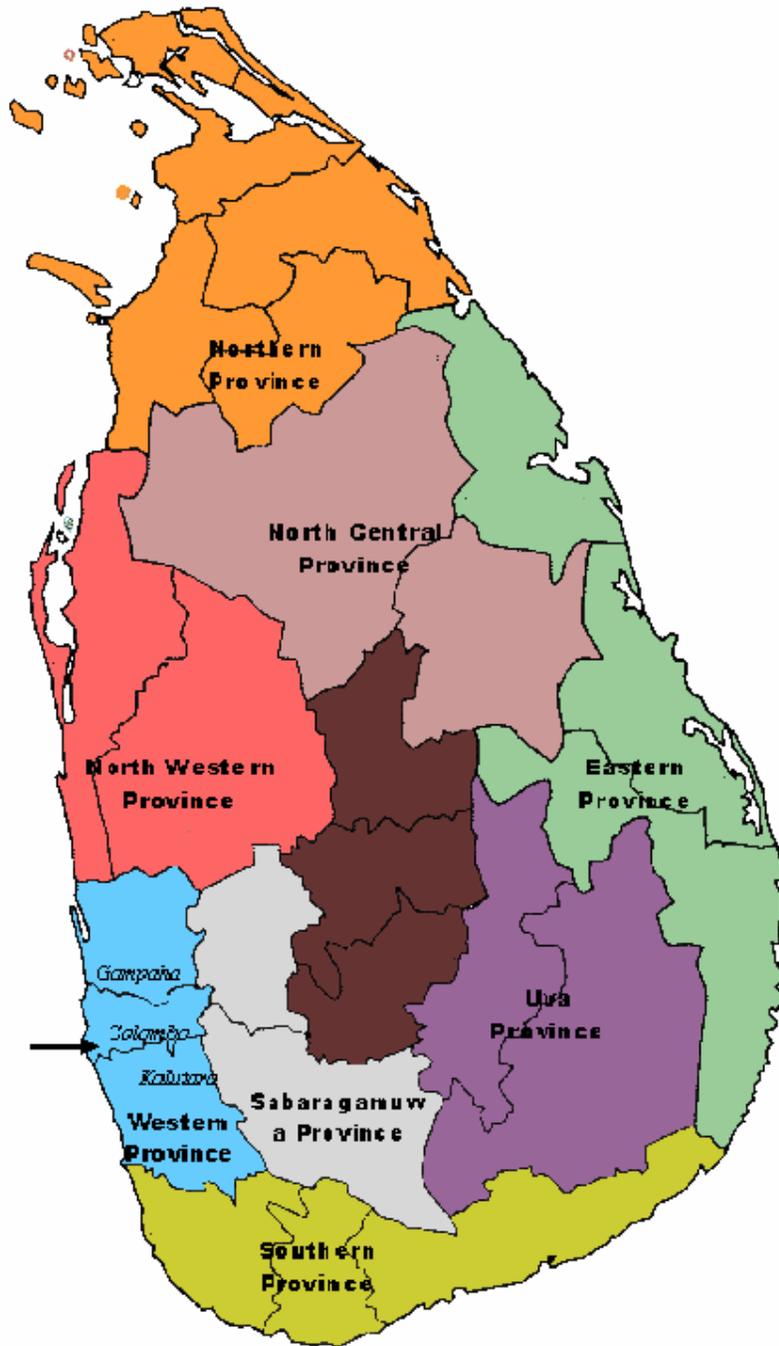


Retrieved 12 November, 2006, from

<http://www.mapsofworld.com/sri-lanka/sri-lanka-political-map.html>

In this map the, commercial Capital and the largest city **COLOMBO** and the officially designated capital (administrative capital) **Sri Jayawardenapura Kotte**, both located in the western provenience are marked. Parliament and the some of administrative offices are located in Sri Jayawardenapura Kotte

Appendix 1.3 Sri Lanka - Illustration of Major Educational Regions
(Perera et al., 2004)



The Map shows the major 9 educational regions [provinces]. The sample of the study selected from the Colombo district, which is in the western province. The other two districts in Western province are Gampaha and Kalutara. Western province is marked in blue in this map.

Appendix 5.1 Photos of Primary buildings & Grade 4 classrooms of one Rural school (K) & one Semi urban school (M)



School K- Grade 4A



School M - Grade 4A



School M Primary building



School K Primary

Appendix 5.2

Appendix 5.2 includes the sample of consent letters used to obtain consent from the senior officials of the Ministry of Education, the principals of the four schools, class teachers of the grade 4 classes and parents of the students in the study.

Appendix 5.2.1 Consent letter of senior officer in Ministry of Education, Sri Lanka

Appendix 5.2.2 Consent letter of principals of the schools

Appendix 5.2.3 Consent letter of class teachers of Grade 4 classes

Appendix 5.2.4 Consent letter of parents of the grade 4 students

Appendix 5.2.1

QuickTime™ and a
decompressor
are needed to see this picture.

Additional Secretary Education quality Development/Provincial/Zonal Director of Education
Ministry of Education

Sri Lanka

Dear Sir /Madam

Request for approval to conduct a research on Gifted Education in the Schools of Sri Lanka

I am a lecturer in Education at the Faculty of Education, The Open University of Sri Lanka. I am undertaking a research in the area of Gifted Education in Sri Lanka for the Degree of Doctor of Philosophy in Education with the assistance and guidance of College of Education, University of New England, Armidale , Australia. The main objective of this study is to develop a package to identify intellectually/academically gifted and talented students in the primary grades in the schools of Sri Lanka. This intended package will help to identify the following categories of gifted children from our primary grade system.

1. Highly gifted children
2. Moderately gifted children
3. Gifted underachievers including invisible gifted underachievers

The research in the area of gifted education reveal the danger that might happen to these special categories of children when not identified and not provided with appropriate provisions according to their giftedness. Not only that, the benefit that they and as well as the whole nation of the country would get when they are provided with appropriate provisions are

also clearly identified. Therefore we as responsible nations in the field of education should give attention to this special group of students in our country for the benefit and development of them and the whole nations and the country.

This study involves principals, grade heads, grade 4 students, the class teachers and the parents of the following schools of western province under your administration.

1. Dharmapala Maha Vidyalaya, Pannipitiya
2. Kalubowila Buddegosha Maha Vidyalaya, Kalubowila
3. Galagedera Kanishta Vidyalaya, Galagedara Padduka
4. Watareka Primary Vidyalaya, Padduka

Following activities are supposed to be carried out during this study.

Initially the moderate and highly giftedness and talented students would be identified by the available test marks of the school records. Further during this research the students are suppose to be tested by a non verbal intelligence test, and some of the identified gifted under achievers and invisible underachievers will under go an intervention program conducted by me to confirm their giftedness and also the highly gifted students will be administered an above level test for further investigation of their highly giftedness.

(*above level test- these students will be tested by year 5 scholarship examination test paper)

Also students would be requested to respond to a rating scale which would be worded in simple form appropriate to their age level. I will get the consent of the parents of the students individually to participate their children in this study.

The teachers and the parents of the students would be requested to response to a rating scale for each student. Also it is also necessary to interview about 10 selected parents, the teachers of the students, primary heads/grade 4 heads of and the principals of the respective schools. Interviews will be recorded with the consent of participants (if participants are not agree with tape recording the information will be recorded by writing). Prior to the above activities I will obtain the consent from each of the participant. I will also obtain the consent of the parents of the students individually to involve their children in this study

Approximately it will take 3 months period to conclude the whole study in one school. , but there will not be under taking activities every day during this period.

Names of schools and participants will be kept confidential and references to them will be by means of fictitious names.

The data collected will be kept in locked filling cabinets in the researcher's office until she completes her study and there after will be in custody of her principal supervisor. It is planed

to finish the study by the end of December 2007. The collected data will be destroyed after five years.

The result of the research may be presented in conferences and published through journal articles during this period. After successful completion of the degree it is hoped to publish as a book for further utilization by relevant authorities and persons.

This research has been approved by Human Research Ethics Committee of the University of New England. (Approval No.HE06/174 Valid to 23/11/7.)

Should you have any complaints concerning the manner in which this research is conducted, please contact the research Ethics Officer at the following address:

*Research Services,
University of New England
Armidale NSW 2351.
Telephone: (02) 6773 3449 Facsimile (02) 6773 3543
Email: Ethics@pobox.une.edu.au*

The attached is to grant permission to access the school in order to carry out this research. I shall be very much grateful to you if you could grant me permission by signing the attached form to have access to particular schools to conduct this research.

Yours Faithfully,

Anoma Ariyaratne
Lecturer in Education
Faculty of Education
The Open University of Sri Lanka

PhD Candidate
School of Education
University of New England
Australia

Consent form

IAdditional Secretary (Quality Education Development) have read the information contained in this information sheet and any questions I have asked have been answered to my satisfaction. I am happy to grant permission to have access to the above mentioned schools under my administration realizing that I may withdraw it at any time. I agree that research data gathered for the study may be published, provided the names of the schools or the participants are not published.

.....
W.Dharmadasa

.....
Researcher A. Ariyaratne

Additional Secretary
(Quality Education Development)

.....
Date

.....
Date

Appendix 5.2.2

QuickTime™ and a
PDF viewer
are needed to see this picture.

The Principal

.....

.....

Request for approval to conduct a research on Gifted Education in the Schools of Sri Lanka

Dear Sir /Madam

I am a lecturer in Education at the Faculty of Education, The Open University of Sri Lanka. I am undertaking a research in the area of Gifted Education in Sri Lanka for the Degree of Doctor of Philosophy in Education with the assistance and guidance of College of Education, University of New England, Armidale , Australia. The main objective of this study is to develop a package to identify intellectually/academically gifted and talented students in the primary grades in the schools of Sri Lanka. This intended package will help to identify the following categories of gifted children from our primary grade system.

4. Highly gifted children
5. Moderately gifted children
6. Gifted underachievers including invisible gifted underachievers

The research in the area of gifted education reveal the danger that might happen to these special categories of children when not identified and not provided with appropriate provisions according to their giftedness. Not only that, the benefits that

these students and as well as the whole nation of the country would get when they are provided with appropriate provisions are also clearly identified. Therefore, we as responsible nations in the field of education should give attention to this special group of students in our country for the benefit and development of them and the whole nations and the country.

Initially the moderate and highly giftedness and talented students would be identified by the available test marks of the school records. Further during this research the students are suppose to be tested by a non verbal intelligence test, and some of the identified gifted under achievers and invisible underachievers will under go an intervention program conducted by me to confirm their giftedness and also the highly gifted students will be administered an above level test for further investigation of their highly giftedness.

(*above level test- these students will be tested by year 5 scholarship examination test paper)

Also students would be requested to respond to a rating scale which would be worded in simple form appropriate to their age level.

The teachers and the parents of the students would be requested to respond to a rating scale for each student. Also it is necessary to interview about 10 selected parents, the teachers of the students, primary heads/grade 4 heads and the principal of the school. Interviews will be recorded with the consent of participants (if participants do not agree with recording the information would be written down) . Prior to the above activities I will obtain the consent from each of the participant.

Approximately it will take 3 months period to conclude the whole study in your school. , but there will not be under taking activities every day during this period. Names of schools and participants will be kept confidential and references to them will be by means of fictitious names.

The data collected will be kept in locked filling cabinets in the researcher's office until she completes her study and there after will be in custody of her principal supervisor. It is planed to finish the study by the end of December 2007. The collected data will be destroyed after five years. The result of the research may be presented in conferences and published through journal articles during this period. After successful completion of the degree it is hoped to publish as a book for further utilization by relevant authorities and persons.

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Research Services,

University of New England

Armidale NSW 2351.

Telephone: (02) 6773 3449 Facsimile (02) 6773 3543

Email: Ethics@pobox.une.edu.au

The attached is to grant permission to access to your school in order to carry out this research. I shall be very much grateful to you if you could grant me permission by signing the attached form to have access to your school to carry out the above activities in this research.

Thank you.

Yours Faithfully,

Anoma Ariyaratne

PhD Candidate

School of Education

University of New England, Australia

Lecturer in Education

Faculty of Education

The Open University of Sri Lanka

Consent form

I the principal of this school have read the information contained in this information sheet and any questions I have asked have been answered to my satisfaction. I am happy to grant permission to have access to the school

.....under my administration and also give my consent for participating in this research realizing that I may withdraw it at any time. I agree that research data gathered for the study may be published, provided the names of the schools or the participants are not published.

.....

.....

Principal of the school

Date

.....

.....

Researcher (A. Ariyaratne)

Date

Appendix 5.2.3



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පස්සියේ ඉල්ලුම/ අමත.

.....

ශ්‍රී ලංකාවේ දැරුවත් තුළ පවත්නා සුභග වඩා/ සහර කුසලතා හදුනා ගැනීම සඳහා සිදු කෙරෙන
 පර්යේෂණය

ශ්‍රී ලංකා විවිධ විශ්වවිද්‍යාලයේ කටිකඩාර්ථවර්ධක ලෙස සේවය කරන මම දැනට ඕස්ට්‍රේලියාවේ ආම්බ්ලේන් පිහිටි "නිව්ග්‍රන්ථලන්ඩ්" විශ්වවිද්‍යාලයේ අධ්‍යයන පූර් (PhD-Education) උපධි සඳරම්. ඉහත උපධි සඳරම නිසාම පර්යේෂණය ශ්‍රී ලංකාවේ අධ්‍යයන ගෝලයට අදාළ වන අතර, එම පර්යේෂණය ශ්‍රී ලංකාවේ සේවයේ පාලන ක්‍රියාවන් තුළ කාර්යය කළුම බලපෑමක් වීමට

මෙම පර්යේෂණයේ මූලික අරමුණ වනුයේ ශ්‍රී ලංකාවේ පාලන ක්‍රියාවන් තුළ සුභග හා සහර කුසලතා සහිත ක්‍රියාවන් (ඉගෙනීම හා වෙනත් අංශ වල දක්‍ෂතා ක්‍රියා කැබ් වුව හෝ දැනටමත් දක්‍ෂතා ඇති වුව) හදුනා ගැනීමට උපකාර කර හත හැකි ශ්‍රී ලංකාවට සුදුසු හදුනා ගැනීමේ පැහැරයක් සකස් කිරීමයි.

සුභග/ සහර කුසලතා සහිත ක්‍රියාවන් හදුනා ගෙන ඔවුන්ට නිසි පෝෂණය (අධ්‍යයන මෙන්ම ඔවුන් තුළ පවතින විවිධ කුසලතා දක්වන අංශ වලට අදාළ) ලබා දීම තුළින් ඔවුන්ගේ සංවර්ධනය මෙන්ම මෙම සංවර්ධනය තුළින් රටක කාලීන හැරවුම වලට උර දිය හැකි පිරිසක් බිහි කර ගැනීම තුළින් රටට හා ජාතියට ලබා ගත හැකි ඉහලින් වැඩි බොහෝමත් පිළිබඳව අධ්‍යයන පර්යේෂණ තුළින් හෙළි කර ඇත. එසේ ම ඔවුන් හදුනා ගෙනගැනීම හේතු ගැටලු ගෙන නිසි පෝෂණය ලබා ගැනීම නිසා ඔවුන්ගේ කුසලතා මිලින විමෙන් ඔවුන්ට මෙන්ම රටට හා ජාතියට අත් විය හැකි අවාසි හා කණ්හවුදායක තත්ත්වය පිළිබඳව ද අධ්‍යයන පර්යේෂණ කණ්හ හෙළිදරව් කොට ඇත.

එම පැහැරය ශ්‍රී ලංකාව තුළ වටහෙන පහත සඳහන් ක්‍රියා කණ්හ හදුනා ගැනීමට උපකාර වන දැනටමත් පිරිසකට ක්‍රියා කළුම බලපෑමක් වේ.

- ඉතා ඉහළ සුභග වටිනා හා/ හෝ සහර දක්‍ෂතා දක්වන ක්‍රියා
- සමාජය මට්ටමක සුභග වටිනා හා/ හෝ සහර දක්‍ෂතා දක්වන ක්‍රියා.
- පන්ති කාමරය තුළ දී අඩු මට්ටමේ ඉවහලකරයක් දක්වන, එහෙත් සුභග වටිනා හා/ හෝ සහර දක්‍ෂතා පෙන්වන කරන ක්‍රියා.
- පන්ති කාමරය තුළ අඩු මට්ටමේ ඉවහලකරයක් දක්වන, මෙන්ම සුභග වටිනා හෝ සහර දක්‍ෂතා එක එල්ලේ ම පෙන්වන නොකරන එහෙත් සුභග වටිනා හෝ සහර දක්‍ෂතා ක්‍රියා වැඩි ක්‍රියා.

Appendix 5.2.4



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ශ්‍රී ලංකාවේ දැරවුන් තුළ පවත්නා සුභග බව/ සහර කුසලතා හඳුනා ගැනීම සඳහා සිදු කෙරෙන පර්යේෂණය

ශ්‍රී ලංකා විවෘත විශ්වවිද්‍යාලයේ කටිකාචාර්යවරයක ලෙස සේවය කරන මම දැනට ඕස්ට්‍රේලියාවේ ආමෙඩ්ලිම් පිහිටි 'නිව්ග්‍රැන්ච්ලන්ඩ්' විශ්වවිද්‍යාලයේ අධ්‍යාපන ඉප (PhD-Education) උපාධිය හදාරමි. ඉහත උපාධියට නියමිත පර්යේෂණය ශ්‍රී ලංකාවේ අධ්‍යාපන ක්ෂේත්‍රයට අදාළ වන අතර, එම පර්යේෂණය ශ්‍රී ලංකාවේ තත්ත්වයන් පහල කිහිපයක් තුළ කරගෙන ගමට බලපෑමටරුත්තු වෙමි.

මෙම පර්යේෂණයේ මූලික අරමුණ වනුයේ ශ්‍රී ලංකාවේ පහල සිසුන් අතුරින් සුභග හා සහර කුසලතා සහිත සිසුන් (ඉගෙනීම හා වෙනත් අංශ වල දක්‍ෂතා තිබීම හැකි බව හෝ දැනටමත් දක්‍ෂතා ඇති බව) හඳුනා ගැනීමට උපකාර කර ගත හැකි ශ්‍රී ලංකාවට සුදුසු හඳුනා ගැනීමේ පැහැරගත් සකස් කිරීමයි.

සුභග/ සහර කුසලතා සහිත සිසුන් හඳුනා ගෙන ඔවුන්ට නිසි පෝෂණය (අධ්‍යාපනික මෙන්ම ඔවුන් තුළ පවතින විවිධ කුසලතා දක්වන අංශ වලට අදාළ) ලබා දීම තුළින් ඔවුන්ගේ සංවර්ධනය මෙන්ම මෙම සංවර්ධනය තුළින් රටක කාලීන වැරදි වලට උර දිය හැකි පිරිසක් බිහි කර ගැනීම තුළින් රටට හා ජාතියට ලබා ගත හැකි ඉමහත් වාසි වෙතැයි මගේ පිළිබඳව අධ්‍යාපනික පර්යේෂණ තුළින් හෙළි කර ඇත. එය ම ඔවුන් හඳුනා නොගැනීම හේතු කොට ගෙන නිසි පෝෂණය ලබා නොදීම නිසා ඔවුන්ගේ කුසලතා මිලින විමෙන් ඔවුන්ට මෙන්ම රටට හා ජාතියට අත් විය හැකි අවාසි හා කණ්හවුදුගත තත්ත්වය පිළිබඳව ද අධ්‍යාපන පර්යේෂණ සහිතව හෙළිදරව් කොට ඇත.

එම පැහැරගත් ශ්‍රී ලංකාව තුළ වෙතැන පහත සඳහන් සිසුන් කණ්ඩ හඳුනා ගැනීමට උපකාර වන ආකාරයට නිර්මාණය කිරීමට බලපෑමටරුත්තු වේ.

- ඉහත ඉහළ සුභග බවක් හා/ හෝ සහර දක්‍ෂතා දක්වන සිසුන්
- සාමාන්‍ය මට්ටමක සුභග බවක් හා/ හෝ සහර දක්‍ෂතා දක්වන සිසුන්.
- පන්ති කාමරය තුළ දී අඩු මට්ටමේ ප්‍රවීණතාවයක් දක්වන, එහෙත් සුභග බවක් හා/ හෝ සහර දක්‍ෂතා පෙන්වුම් කරන සිසුන්.
- පන්ති කාමරය තුළ අඩු මට්ටමේ ප්‍රවීණතාවයක් දක්වන, මෙන්ම සුභග බව හෝ සහර දක්‍ෂතා එක එල්ලේ ම පෙන්වුම් නොකරන එහෙත් සුභග බව හෝ සහර දක්‍ෂතා තිබීම හැකි සිසුන්.

මෙම පර්යේෂණය සඳහා මෙම පාසලේ විදුහල්පතිතුමා/ තුමිය 4 වන ශ්‍රේණියේ ඉගෙනුම් ලබන සිසුන්, එම ශ්‍රේණී වල උගන්වන ගුරුවරුන්, සිසුන්ගේ දෙමව්පියන් ආශ්‍රීතව දත්ත එකතු කිරීමට ආලෝම කර ඇත.

ඉහත පර්යේෂණය සඳහා ඕනෑම ලිපිනයකට නිව් ඉන්ෆෝමේෂන් විශ්වවිද්‍යාලය මිනිස් පර්යේෂණ පිළිබඳ අවුරුදු 10 කොමසියන් අනුමැතිය ලබා ගෙන ඇති බව දන්වා සිටිමි.

ඉහත පර්යේෂණය සඳහා ඔබගේ, සහභාගිත්වයෙන් මෙන්න ඔබ දැරුවත් සහභාගී කරවීමෙන් ද සහයෝගය ලබා දෙන ලෙස ඉල්ලා සිටිමි.

කරුණා කර පහත සඳහන් තොරතුරු පිරවීමෙන් ඔබගේ සහයෝගය ප්‍රකාශ කරන මෙන් දන්වමි.

ස්තූතියි,

මෙහට, හිතවත්

.....

අනාමය ආර්යවරයන්
කර්මාන්තරීණී,
අධ්‍යාපන විද්‍යා, ශ්‍රී ලංකා විවිධ විශ්වවිද්‍යාලය,
කාමල, නුගේගොඩ.

අනුමැතිය තොරතුරු

.....විද්‍යාලයේ ඉගෙනුම්
ලබන.....යන මගේ දරුවා ඉහත පර්යේෂණය සඳහා සහභාගී
කරවීමට කැමැත්ත පළ කරන අතර, ඒ සඳහා මගේ/ අපගේ සහයෝගය ලබා දෙන බව ද දන්වා සිටිමි.
ඕනෑම අවස්ථාවක මගේ කැමැත්තෙන් මෙම පර්යේෂණයෙන් ඉවත් වීමට මට හැකි බව ද මම දනිමි.
ඉහත පර්යේෂණය තොරතුරු පාසලේ ගේ සහභාගී වන්නන්ගේ නම් ගම් හෙළි නොකර, ප්‍රසිද්ධියට පත්
කරන බවද මම දනිමි.

.....

දෙමව්පියන්ගේ අත්සන

.....

පර්යේෂකයා.

Appendix 5.3 Details of the experimental and control group sample:

Objective 2 data collection stage 2

| School /Class | Experimental group– No. of students | Control group No. of students |
|----------------------|--|--------------------------------------|
| K– A | 9 | 8 |
| L – A | 9 | 8 |
| M – A | 9 | 8 |
| M – B | 8 | 5 |
| J – A | 4 | 4 |
| J – B | 11 | 7 |
| J – C | 4 | 2 |
| J – E | 4 | 3 |
| Total | 56 | 45 |

Appendix 5.4 Details of the intervention items (LPAD items and items constructed by the researcher

| Item | Source |
|---|----------------------------------|
| Analogies test problem (Figure A-3 | Feuerstein et al. (1979), p, 363 |
| Analogies test problem 2 (Figure A-4) | Feuerstein et al (1979), p, 364 |
| Figural training problem 1 (Figure A-14) | Feuerstein et al (1979), P, 374 |
| Figural training problem 3 (Figure A-15) | Feuerstein et al (1979), P, 375 |
| Figural training problem 4 (Figure A-16) | Feuerstein et al (1979), P, 376 |
| Figural training problem 5 (Figure A-17) | Feuerstein et al (1979), P, 377 |
| Figural training problem 6 (Figure A-18) | Feuerstein et al (1979), P, 378 |
| Figural training problem 8 (Figure A-19) | Feuerstein et al (1979), P, 379 |
| Figural training problem 10 (Figure A-20) | Feuerstein et al (1979), P, 380 |
| Figural training problem 12 (Figure A21) | Feuerstein et al (1979), P, 381 |
| Figural training problem 13 (Figure A-22) | Feuerstein et al (1979), P, 382 |
| Figural training problem 15 (Figure A-23) | Feuerstein et al (1979), P, 383 |
| LPAD Variations 1 (Figure 10) | Feuerstein et al (1979), P, 96 |
| LPAD Variations 11 (Figure 11) | Feuerstein et al (1979), P, 98 |
| LPAD Variations 11 (Figure 12) | Feuerstein et al (1979), P, 99 |
| Analogous items to Set B RSPM | Items develop by the researcher |
| Analogous items to Set C RSPM | Items develop by the researcher |
| Analogous items to Set D RSPM | Items develop by the researcher |
| Analogous items to Set E RSPM | Items develop by the researcher |

Appendix 5.5 RSPM (IQ test) Answer sheet

SCHOOL:

STUDENT NO.:

DATE:

DATE OF BIRTH:

AGE:

| | SET A | SET B | SET C | SET D | SET E |
|-----|--|--|--|--|--|
| A1 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B1 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C1 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D1 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E1 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A2 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B2 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C2 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D2 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | F2 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A3 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B3 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C3 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D3 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E3 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A4 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B4 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C4 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D4 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E4 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A5 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A6 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B6 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C6 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D6 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | F6 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A7 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B7 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C7 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D7 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E7 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A8 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B8 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C8 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D8 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E8 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A9 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B9 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C9 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D9 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E9 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A10 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B10 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C10 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D10 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E10 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A11 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B11 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C11 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D11 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E11 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |
| A12 | <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | B12 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 | C12 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | D12 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 | E12 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 |

Appendix 5.6 Original PTSN Forms (in English) and Forms translated in to Sinhalese

Appendix 5.6, the original PTSN forms consist of both Form A and Form B. Therefore, the translated Sinhalese version also has both forms. These two sets of forms illustrated as Appendix 5.6.1 and Appendix 5.6.2.

Appendix 5.6.1 represents the original set of Forms A and B (in English)

Appendix 5.6.2 represent the set of Sinhalese version of Forms A and B. The researcher has changed some of the icons in original forms in order to better express the object/act represented by the icon. (Prior to proper data collection researcher translated the original forms into Sinhalese language without changing any icons. Then distributed them among some students and discussed on them. The researcher found that student had a difficulty of understanding some of the icons in the original forms.). The details of the changed items icons are as follows.

Form A

Icons of items – 2, 3, 6, 7, 9, and 12 were changed

Form B

Icons of items – 1, 3, 5, 6, 8, 9, 10, 11, and 12 were changed.

Appendix 5.6.1 The original PTSN Forms A and B (in English)



1. HERCULES

A hercules is a girl or a boy who has very strong arms or legs, and can lift very heavy objects.

1 **2** **3**



2. MUSICIAN

A musician is a girl or a boy who plays a musical instrument very well.

1 **2** **3**



3. LEADER

A leader is a girl or a boy who directs others well and knows how to get people to listen and obey when she or he tells them what to do or how to do it.

1 **2** **3**



4. ARTIST

An artist is a girl or a boy who can draw anything: objects, animals, people.

1 **2** **3**



5. SINGER

A singer is a girl or a boy who has a beautiful voice and sings in tune without any wrong notes.

1 **2** **3**



6. SOCIABLE

A sociable is a girl or a boy who knows how to make friends, and talk easily with everyone, even adults or children she or he doesn't know.

1 **2** **3**



7. SPOKESPERSON

A spokesperson is a girl or a boy who is good at defending the class's point of view when it comes to obtaining permission to do something, changing a rule or a teacher's decision.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



8. TIRELESS ONE

A tireless one is a girl or a boy who can play sports or games for a long time without getting out of breath or exhausted.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



9. CRAFTSPERSON

A craftsperson is a girl or a boy who can make all sorts of pretty and original things with her or his hands: sculptures, masks, jewelry, knitting, pottery, etc.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



10. DANCER

A dancer is a girl or a boy who follows the rhythm of music well; her or his movements are easy and graceful.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



11. SPEAKER

A speaker is a girl or a boy who speaks very well and can talk about a subject in front of the class or other people without reading a text.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



12. HARE

A hare is a girl or a boy who is always faster than others in physical activities (for example, when running, swimming, or riding a bicycle).

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

ppendix 5.6.1 The original PTSN Forms A and B (in English)



1. ENCYCLOPEDIA

An encyclopedia is a girl or a boy who knows lots of things about all kinds of subjects, not just school subjects.

1 **2** **3**



2. HANDYMAN

A handyman is a girl or a boy who is very good at inventing original machines and designing and building all kinds of things.

1 **2** **3**



3. COMEDIAN

A comedian is a girl or a boy who makes everyone laugh with her or his jokes, imitations, or improvisations.

1 **2** **3**



4. PROGRAMMER

A programmer is a girl or a boy who is very good with computers. A programmer can learn new programs alone and does not need to ask for help when a program is not working.

1 **2** **3**



5. COUNSELOR

A counselor is a girl or a boy who knows what is right and wrong, fair and unfair. A counselor gives us good advice to help us act the way we should.

1 **2** **3**



6. LIGHTNING

A lightning is a girl or a boy who understands explanations quickly and finds the right answers before the others.

1 **2** **3**



7. SCIENTIST

A scientist is a girl or a boy who knows a lot about science (for example, about plants, animals, chemicals, or planets).

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



8. STIMULATOR

A stimulator is a girl or a boy who knows how to encourage others to do their best and not give up when things are going badly.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



9. ACTOR

An actor is a girl or a boy whom I would choose to play the main role in a film or a play.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



10. MECHANIC

A mechanic is a girl or a boy who is very good at operating things such as VCRs, televisions, CD players, etc. A mechanic can even repair simple machines.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



11. JUDGE

A judge is a girl or a boy who is very good at settling arguments between students, and knows how to help people compromise and reach an agreement.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



12. BRIGHT IDEA

A bright idea is a girl or a boy who has lots of projects and suggestions for activities to do in class or in the school.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

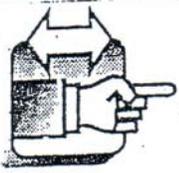
Appendix 5.6.2. The PTSN Forms A and B translated into Sinhala language

| | |
|--|--|
| <div> </div> <p> 1. පන්ති කාමරයේ දී ඉගෙන ගන්නා විෂය කරුණු වලට අමතරව වෙනත් විෂය කරුණු පිළිබඳව වැඩිපුර කෙරුණු දත්ත ගැනුණු හෝ පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න. </p> | <div> <p>↑ 2 3</p> </div> <div> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> </div> |
| <div> </div> <p> 2. විවිධ තව නිෂ්පාදන (උදාහරණ- විවිධ යන්ත්‍ර, උපකරණ ආදිය) නිපදවිය හැකි මෙන්ම තවත් බොහෝ දේ සැලසුම් කර හැකි ගැනුණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න. </p> | <div> <p>1 2 3</p> </div> <div> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> </div> |
| <div> </div> <p> 3. නිතර නිතර විහිලු තහලු කිරීමෙන් හැම දෙනාම සිතහවෙත් හා ප්‍රීතියෙන් තැබිය හැකි ගැනුණු හෝ පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න. </p> | <div> <p>1 2 3</p> </div> <div> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> </div> |



4. කොම්පියුටර භාවිතයේ දක්ෂ, අන් අයගෙන් වැඩි උදව්වක් නොමැතිව කොම්පියුටර පැකේජ/ තැටි හසුරුවා ගත හැකි මෙන් ම ඒවා භාවිතයේ දී මුහුණ පෑමට සිදුවන ගැටලු තමාටම විසඳා ගත හැකි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. එවැනි ළමුන් තීදෙනෙකු පිළිවෙලින් නම් කරන්න.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



5. හරි වැරැද්ද හෝ සාධාරණ හා අසාධාරණ හෙදින් හඳුනන ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. මෙවැනි ළමුන් පන්ති කාමරයේ අතින් ළමුන්ට ගැටලු හෝ ප්‍රශ්න වලට මුහුණ පෑමට සිදුවන අවස්ථාවල දී ඒවා විසඳා ගැනීමට උපදෙස් දීමට පුළුවන. මෙවැනි ගැහැණු හෝ පිරිමි ළමුන් "උපදේශක වරයකු" ලෙස හැඳින්විය හැකි ය. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ළමුන් තීදෙනෙකු පිළිවෙලින් නම් කරන්න.

| | | |
|--------------------------|--------------------------|--------------------------|
| 1 | 2 | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



6. පන්ති කාමරයේ උගන්වන දේ ඉක්මනින් අවබෝධ කර ගන්නා සහ අන් අයට වඩා ඉක්මනින් හරි උත්තර සොයා ගන්නා ගැහැණු හා පිරිමි ළමුන් පන්ති කාමරයේ ඇත. මෙවැනි ළමුන් තීදෙනෙකු පිළිවෙලින් නම් කරන්න.

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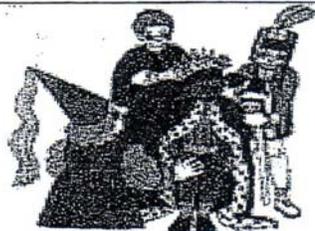
7. පරිසරයේ ඇති ශාක, සතුන් හා ගුහලෝක ආදිය ගැන බොහෝ දේ දන්නා හා ඒවා පිළිබඳ අලුත් තොරතුරු සොයා ගැනීමට උනන්දුවක් දක්වන ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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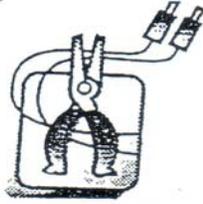
8. කණ්ඩායම් වැඩක් කරගෙන යාමේ දී එම වැඩය තමාට හැකිතාක් හොඳින් කර ගෙන යාමට අන් අයට උනන්දු කරවිය හැකි මෙන්ම එසේ කරගෙන යාමේ දී බාධා වලට මුහුණ පෑව ද බෙරියමත්ව ඒවාට මුහුණ දීමට අන් අය උපදෙස් දිය හැකි ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. ඔබ පන්ති කාමරයේ සිටින එවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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9. නාට්‍යවල රඟපෑමෙහි දැක් ගැහැණු හෝ පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකිය. එම දැක්වූයේ ඇති ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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10. රේඩියෝ, කැමරා, රූපවාහිනී, විදියේ බෙක්, CD යන්ත්‍ර ක්‍රියාකරවීමට දැන මෙන්ම සරල යන්ත්‍ර සූත්‍ර කැඩුන විට අලුත් වැඩියා කිරීමට ද පුළුවන් ලමුන් ඔබ පන්ති කාමරයේ සිටිය හැකිය. ඔබ පන්ති කාමරයේ සිටින මෙම දැනෙන ඇති ලමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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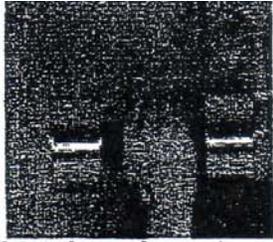
11. පන්ති කාමරයේ ලමුන් අතර වාද විවාද පැන නැගුන විට ඔවුන් සන්සුන් කළ හැකි ගැහැණු හෝ පිරිමි ලමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. මෙවැනි අයට අනිත් ලමුන්ට කිසියම් අවසන් තීරණයක් ගැනීමට උදව් කළ හැකි ය. එවැනි ලමයෙකු 'විනිශ්චයකාරයෙකු' ලෙස හැඳින්වේ. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ලමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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12. පන්ති කාමරය තුළ කළ හැකි විවිධ ව්‍යාපෘති හෝ ක්‍රියාකාරකම් පිළිබඳ වටිනා අදහස් දැක්විය හැකි ගැහැණු හා පිරිමි ලමුන් ඔබ පන්ති කාමරයේ සිටිය. ඔබ පන්ති කාමරයේ සිටින මෙවැනි ලමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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1. ඉතා ශක්තිමත් අත් හා පාද සහිත, එසේම බර ඉසිලීමේ දැනුම ගැනුණු හෝ පිරිමි ළමයකු "තර්කිගුලස්" ලෙස හඳුන්වයි. පත්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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2. සංගීත භාණ්ඩ හොඳින් වාදනය කළ හැකි ගැනුණු හා පිරිමි ළමුන් ඔබ පත්ති කාමරයේ සිටිය හැකිය. පත්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

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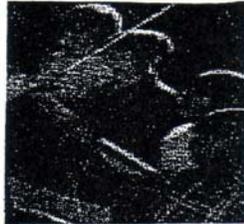
3. අත් අඟ හොඳින් හසුරුවා ගත හැකි මෙන්ම ශමක් කළ හැකිකේ කෙසේ ද ශන්න පිළිබඳවත් උපදෙස් දිය හැකි එසේ ම එම උපදෙස් අනුව අත් අඟ කටයුතු වලට යොමු කර ගත හැකි නායකයන් ඔබ පත්ති කාමරයේ ගැනුණු හා පිරිමි ළමුන් අතර සිටිය හැකි ය. පත්ති කාමරයේ සිටින මෙවැනි නායකයින් තුන් දෙනෙකු පිළිවෙලින් නම් කරන්න.

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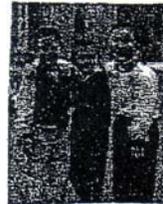
4. චිත්‍ර ඇඳීමේ දක්ෂ කලාකරුවන් ඔබ පන්ති කාමරයේ ගැහැණු හා පිරිමි ළමුන් අතර සිටිය හැක. එවැනි ළමුන් තිදෙනෙකු තමා කරන්න.

1 2 3



5. මිහිරි කටහඬක් ඇති, කවි හා සිංදු තාලයට ගයනා කළ හැකි ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. එවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් තමා කරන්න.

1 2 3



6. ඉතා ඉක්මනින් අත් අඟ හා ශතඵල විය හැකි ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටිය හැකි ය. පන්ති කාමරයේ සිටින එවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් තමා කරන්න.

1 2 3



7. ගම්කිසි කටයුත්තක් කිරීමට අවසර ලබා ගැනීමට උවමනා වූ විට පන්තිය වෙනුවෙන් කථා කිරීමට ඉදිරිපත් වන ගැහැණු හා පිරිමි ළමුන් පන්ති කාමරයේ ඇත. පන්ති කාමරයේ සිටින වෙනත් ළමුන් තීදෙනෙකු නම් කරන්න.

1 2 3



8. පහසුවෙන් විඩාවට පත් නොවී බොහෝ වේලාවක් ක්‍රීඩා කළ හැකි ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ සිටියි. පන්ති කාමරයේ සිටින එවැනි ළමුන් තීදෙනෙකු පිළිවෙලින් නම් කරන්න.

1 2 3



9. අත්වැඩ කිරීමේ දැන ගැහැණු හා පිරිමි ළමුන් ඔබ පන්ති කාමරයේ ඇත.
(උදුහරණ, මැටි භාණ්ඩ සැදීම, පඬුලු අලුත භාණ්ඩ සැදීම, මැහුම් ගෙතුම් කිරීම වැනි)
පන්ති කාමරයේ සිටින මෙවැනි ළමුන් තීදෙනෙකු පිළිවෙලින් නම් කරන්න.

1 2 3



10. නැටුමෙහි දැන ගැනුණු හා පිරිමි ළමුන් ඔබ පත්ති කාමරයේ සිටියි. පත්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

1 2 3



11. ලිය ගත් දෙයක් නොබල අන් අය ඉදිරියේ හෙදින් කපා පැවැත්විය හැකි ගැනුණු හා පිරිමි ළමුන් ඔබ පත්ති කාමරයේ සිටිය හැක. පත්ති කාමරයේ සිටින මෙවැනි ළමුන් තිදෙනෙකු පිළිවෙලින් නම් කරන්න.

1 2 3



12. ශාරීරික ක්‍රීඩාකාරකම්වල (දිවීම හා පැනීම) යෙදෙන විට ඒවා අන් අයට වඩා වේගයෙන් කරගෙන යන ගැනුණු හෝ පිරිමි ළමුන් ඔබ පත්ති කාමරයේ සිටියි. එවැනි ළමුන් තිදෙනෙකු නම් කරන්න.

1 2 3

Appendix 5.7 A sample of students' name list, indicating Student Identification Number (SIN) used by the students in nominating peers in PTSN Forms A & B

| Name | | SIN |
|------|---------------------|-----|
| 1 | රබීරු මහේසා | 1 |
| 2 | සහේ දිසානායක | 2 |
| 3 | ඉහමල් එම් ආචාර්ය | 3 |
| 4 | පී.එම්. සුමනසේන | 4 |
| 5 | ආර්.ඒ.අමරසේන | 5 |
| 6 | මනුෂ් ජයවර්ධන | 6 |
| 7 | ඩබ්.එස්.එස්. සංචාරි | 7 |
| 8 | සමීර් මධුසේන | 8 |
| 9 | ආචාර්ය ඩබ්.එස්.එස්. | 9 |
| 10 | මේරියානු ජයවර්ධන | 10 |
| 11 | සමීර් දිසානායක | 11 |
| 12 | මුනිර් මහේසා | 12 |
| 13 | ආචාර්ය ඩබ්.එස්.එස්. | 13 |
| 14 | සමීර් මධුසේන | 14 |
| 15 | එස්.එස්. ජයවර්ධන | 15 |
| 16 | මනුෂ් ජයවර්ධන | 16 |
| 17 | පී.එම්. සුමනසේන | 17 |
| 18 | ආචාර්ය ඩබ්.එස්.එස්. | 18 |
| 19 | සමීර් මධුසේන | 19 |
| 20 | පී.එම්. සුමනසේන | 20 |
| 21 | රබීරු මහේසා | 21 |
| 22 | මනුෂ් ජයවර්ධන | 22 |

Appendix 5.8 The Sinhalese translation of Parent Inventory for Finding Potential (PIP)– a rating scale for data collection from parents. (The original forms are find in Rogers (2000, pp).

දරුවන් තුළ පවතින සුභග වච/කුභලතා හඳුනා ගැනීමට යෙදවිය හැකි වන ඉදිරිපත් කෙරෙන දරුවන්ගේ වර්තමාන/විශේෂ ලක්ෂණ පිරික්සුම් ලැයිස්තුව.

මවගේ දරුවා තුළ පහත 1-51 දක්වා ඇති වර්තමාන/විශේෂ ලක්ෂණ කොතරම් දුරට දක්නට ලැබුවේදැයි අදාළ කොටුවේ '✓' යෙදවීමෙන් තලකුණු කරන්න.

| | ඉතා කලතුරකින් හොඳින්ම හැඟේ. | අධික දැනටමත් පවතී. | කම්පානෙන් දක්නට ඇත. | ගැළී වචන දක්නට ඇත. |
|---|-----------------------------|--------------------|---------------------|--------------------|
| | 1 | 2 | 3 | 4 |
| 1. ප්‍රශ්නකර ඇතුළු වීම මඳක් කල්පනාකාරී වී පිළිතුරු දේ. කිසියම් අළුත් වැඩක් භාරදුන් විට එකවිවම එම වැඩට පවත් නොගෙන මඳක් කල්පනා කර වී එම වැඩට හිතර වේ. | | | | |
| 2. කිසියම් අළුත් කටයුත්තක් කිරීමේ දී තමා දැනටමත් දක්නා දේ හා අලුත් කටයුත්ත අතර සම්බන්ධතාවයක් දකින අතර තමා දක්නා දේ අළුත් අවස්ථාවකට යොදා ගනී. (උදාහරණ:- 'ගෙල්ලම් කඩයක්' කරන අවස්ථාවක තමාගේ ගණිත දැනුම කඩයට භිලා ගැනීමට උපකාර කර ගනී). | | | | |
| 3. කටයුත්තක් භාරදුන් විට වෙහෙස වේලාවක් එම කටයුත්තම නිසැලි සිටියි. (උදාහරණ:- විකුරක් ඇදීමට හෝ අත්වැඩක් කිරීමට පටන් ගත් අවස්ථාවක එය අවසානයක් දක්වා කර ගෙන ගම). | | | | |
| 4. කරුණු වෙහෙසමයක් මතක තබා ගනී. | | | | |
| 5. පාලන ගමට හඳුනාගත් දක්වයි. ඇතැම් අවස්ථාවල දී හෙදර දී පවා 'ගෙල්ලම් පාලන' පවත්වයි. | | | | |
| 6. ඉතා ඕනෑකමින් හා උනන්දුවකින් වෙහෙස ක්‍රියාකාරකම් කිරීමට පටන් ගනී. | | | | |
| 7. ගැටලු පැන නැගුන විට ප්‍රශ්න කරයි. නොගැලපෙන අවස්ථා පැහැදිලිව දකී. සමස්ත වඩා හොඳින් කිරීමට හෝ දියුණු කිරීමට උපදෙස් දෙයි. (උදාහරණ සමස්ත කරගෙන ගමේ දී අකාර්මික වුවහොත් එයට හේතු අවබෝධ කර ගෙන එය කාර්මික කර ගැනීමට අදහස් ඉදිරිපත් කරයි.) | | | | |
| 8. ඉතා සංකීර්ණ තොරතුරු පහසුවෙන් ගෙනු කර දක්වයි. | | | | |
| 9. තමා මුලිකව පවත් ගන්නා වැඩ කටයුතු වල නිසැලි සිටීමට උනන්දුවක් දක්වයි. (උදාහරණ- තමා සැමස්තෙන් ගෙවී කරන එකතු කර ගෙන ගැනීම, තමා සමඟ පෙනෙතින් ගණන් ගැනීම, උනන්දුවෙන් කර ගෙන ගම). | | | | |

| | ඉතා කලතුරුණික/ කෙටිකාලීනව සැලකිය යුතු. | ඉතාම අවශ්‍ය වන අවස්ථාවල දී පමණක්. | සාමාන්‍යයෙන් දක්නට ලැබේ. | සැම විටම දක්නට ලැබේ. |
|--|--|-----------------------------------|--------------------------|----------------------|
| | 1 | 2 | 3 | 4 |
| 10. හැම විටම විමසීමක් ය. යමක් සිදු වූයේ කෙසේද? එසේ විමසා හේතු ආදිය සොයා බලයි. නිතර ප්‍රශ්න නගයි. (උදාහරණ- තම වෛකල්‍යයේ නුපුරුදු සහකාරයන් අතින් පැමිණි පිළිබඳ සොයා බැලීමට උනන්දු වීම, විදුලි උපකරණයක් ක්‍රියා විරහිත වූ විට එයට හේතු සොයා බැලීම.) | | | | |
| 11. දුකට වඩා පිළිබඳව සංවේදී වෙයි. යමක් පිළිබඳව දිගු කලක් නිරන්තරයෙන් සිතයි. | | | | |
| 12. වටා පිටාවේ සුන්දරත්වය පිළිබඳව උනන්දුවක් දක්වයි. (උදාහරණ- සේ වැල, මල් වැනිවලට උනන්දු වීම ලස්සන ස්ථාන හැරීමට ඇති ආශාව.) | | | | |
| 13. නිදහසේ සිතිය හැකිය. අන් අයගේ අදහස් වලට වඩා තමාගේ අදහස් කෙරෙහි විශ්වාසය තබයි. (උදාහරණ- කිසියම් කටයුත්තක් කිරීමේ දී හෝ අලුත් යමක් සැලකීමේ දී අන් අයගේ අදහසකට වඩා තමාට සිතන ආකාරයට කටයුතු කිරීම.) | | | | |
| 14. අන් අය සිතන පහත ආකාරය පහසුවෙන් අවබෝධ කර ගනියි. එසේ ම අන් අයගේ ක්‍රියාවන් නිසා පහසුවෙන් සිත් තැවුල් ඇති කර ගනියි. (උදාහරණ- මවගේ, පියාගේ අදහස් හේරුම් ගනියි.) | | | | |
| 15. තමාගේ නිදහස් අදහස් ප්‍රකාශ කරයි. | | | | |
| 16. වේදනා දෙන සිදුවීම් ඇතිවීමෙන්, දුක් සහගත කරා වලට සවන් දීමෙන් ඉතා පහසුවෙන් සිත් වේදනා ඇති කර ගනියි. | | | | |
| 17. තම නිදහසේ (අන් අයගේ උදව්වක් නැතිව) අදහස් වලට අනුව විවිධ අවස්ථාවල දී කටයුතු සැලසුම් කරයි. තමා කර වේදනා පිළිබඳව තක්සේරුවක් ද සෙවයි. (තමා කළ ව්‍යවස්ථා හරි හෝ වැරදි බව සොයා බැලීම) | | | | |
| 18. අලුත් තොරතුරු ඉක්මනින් ඉගෙන ගනියි. දැනටත් දන්නා තොරතුරු පහසුවෙන් මතකයට නගා ගනියි. | | | | |
| 19. සම වශයෙන් සිටින අනිත් දරුවන්ට වඩා ඉක්මනින් කරා කිරීමට පටන් ගත් දරුවකු වන අතර පුළුල් වචන මාලාවක් ඇත. (වෙනස් වචන දැනගනියි.) | | | | |
| 20. අන් අයගේ සහපත ගැන උනන්දුවෙයි. අනුකම්පා සහගතයි. සාධාරණය හා යුක්තිය පිළිබඳව උනන්දුවක් දක්වයි. | | | | |
| 21. ප්‍රීතී ජනක දරුවකු. ප්‍රීතීමත් අවස්ථාවලට සහගතී වීමට ඉතා සැමරියි. (නිතර විනෝදයෙන් සිටීම.) | | | | |
| 22. සම පිළිබඳව, තමාගේ හැසිරීම් පිළිබඳව හෙළිත් හේරුම් ගෙන ඇත. ඉගෙන ගැනීමට තමාට සුදුසුම ක්‍රමය හඳුනා ගෙන ඇත. (උදාහරණ- තනිව තමා පවතින කටයුතුවලට සහභාගී වීම හෝ අන් අයගේ උදව් උපකාර ලබා ගැනීම, ක්‍රියාකාරකම් තුළින් ඉගෙන ගැනීම) | | | | |
| 23. විශේෂ විෂය ක්ෂේත්‍රයක් සම්බන්ධව ඉතා හොඳ දැනුමක් සහිතව මෙන්ම එම විෂය ක්ෂේත්‍රයට ඉතා සැමරියි දක්වයි. (උදාහරණ- ගණිත විෂය, සිංහල විෂය ආදී වශයෙන් කිසියම් විෂයකට සැමරියි හා දැනුම වඩා) | | | | |

| | ඉහත කොටසේ 1 | කලතුරකින්/ කොටසේ 2 | අයුතු අවස්ථාවල දී පමණක්. 3 | දක්නට දක්නට අත්. 4 |
|---|-------------------|--------------------------|--|-----------------------------|
| 24. තමාගේ හැකියා පිළිබඳ වැරදි විශ්වාස ගොඩ නගා ගෙන ඇත. තමාගේ සම වයසේ සිටින ළමුන්ට වඩා තමාගේ හැකියාවන් අඩු මට්ටමක ඇතැයි සිතීම. | | | | |
| 25. තමා දකෂණයක් ලෙස පිළිගනු ලැබීමට හැමිණි. තමාගේ දැනුම හෝ කුසලතා වැඩි දියුණු කර ගැනීමට උනන්දු වෙයි. | | | | |
| 26. යම් කටයුත්තක් නිම කිරීමට හැර දුන් විට එම කටයුත්ත නිමා වන තුරුම කර ගෙන යයි. | | | | |
| 27. කිසියම් දෙයක් හෝ අවස්ථාවක් පිළිබඳව වැඩි පුර පොරොන්දු ගෙනීමට උනන්දු වෙයි. | | | | |
| 28. කණ්ඩායම් වැඩ කටයුතු වල දී තමාට මූලිකත්වය ලබා ගැනීමට උත්සාහ කරයි. | | | | |
| 29. හැකියාවන් හෝ කුසලතා කිහිපයක් සමබර ලෙස නොපිහිටයි. ඇතැම් අංශයක කුසලතා හෝ හැකියා අනිත් අංශ වලට වඩා වැඩියෙන් දක්වයි. | | | | |
| 30. අවස්ථාව හෝ කටයුත්ත අනුව හැඩ ගැසිය හැකිය. තම මතයේ ම එල්ල නොකිරී. | | | | |
| 31. තමාගේ උවමනා එතකම් වලට සරිලන පරිදි තම වට පිටව සකස් කර ගනියි. | | | | |
| 32. මානසික, චිත්තවේගික හෝ කායික පීඩා කරදර විඳ දැර ගත හැකිය. | | | | |
| 33. විකල්ප නොහැකි හැටිලි සහගත හෝ අවුල් සහගත අවස්ථා වලට ඉතාම පහසු ලෙස මුහුණ දෙයි. | | | | |
| 34. තමාගේ හැකියාවන් පිළිබඳව හොඳ අවබෝධයක් තිබේ. (උදාහරණ- තමාට යමක් හොඳින් කිරීමට හැකි බව දැනුවා සිතයි. තමාගේ හැකියාවන් පිළිබඳ ඉහළ තක්සේරුවක් ඇත). | | | | |
| 35. තමා ලැබූ ජනගහණය හෝ පරාජය තමාගේ උත්සාහය හා හැකියාව අනුව ලැබූ දෙයක් ලෙස හැර ගනියි. | | | | |
| 36. යමක් පිළිබඳ පහසුවෙන් විවිධ අදහස් පළ කරයි. (උදාහරණ- පින්තූරයක් පෙන්වා යමක් ඇසූ විට එහි ඇති දේ පිළිබඳව විවිධ අදහස් පළ කරයි. (එක අදහසකට වඩා)) | | | | |
| 37. හැම විටම අලුත් ක්‍රම සාපිඤ්ඤා කරයි. තමා කරන කටයුතු වලින් අසාමාන්‍ය හෝ විශිෂ්ඨ ප්‍රතිඵල ලබයි. | | | | |
| 38. සිංහලී යමක් මවා ගැනීමේ හැකියාව වැඩියි. | | | | |
| 39. කායික ක්‍රියාකාරකම් සතුටින් සිදු කරයි. | | | | |
| 40. වෙනස් කටයුතු කරගෙන යාමට තද උද්යෝගයක් හා ප්‍රාණවත් බවක් දක්වයි. (කම්මැලි කමින් පොරව අඟවන වැඩක යෙදීම). | | | | |
| 41. කිසියම් කටයුත්තක් ඉතා කුඩා පිරිසට ගණනාවකට කඩා මනාව සැලසුම් කරයි. (උදාහරණ- 'ගෙල්ලම් නිවසක්' හෝ 'කඩක' දැමීමේ දී එය සෑදීමට අවශ්‍ය බඩු, ඒවා සකසා ගන්නා ආකාරය, විවිධ වැඩ කටයුතු මිනුමන්ට පැවරීම ආදී ලෙස සැලැස්මක් ඇතිව කිරීම). | | | | |

| | ඉහත කමතුරකින්/ කෙටුම්පත හැක. | ආකාරී අවස්ථාවල දී පමණක්. | සාමාන්‍යයෙන් දක්නට ඇත. | සෑම විටම දක්නට ඇත. |
|---|------------------------------|--------------------------|------------------------|--------------------|
| | 1 | 2 | 3 | 4 |
| 42. ඉහත සංකීර්ණ තොරතුරු ආශ්‍රයෙන් ඉහත වැදගත් තොරතුරු ඉහත ඉක්මනින් තෝරා ගැනීමට හැකිවේ. | | | | |
| 43. අවට තීරණයට වැඩිපුර මනා සම්බන්ධතාවයක් දැක්වේ. | | | | |
| 44. මිත්‍රයන් අතර බොහෝ ප්‍රසිද්ධිය. අන් අය මුහුණ ඇහුරු කිරීමට කැමැත්ත දක්වයි. | | | | |
| 45. අන්‍යයන් පිළිබඳ අවධානයක් දක්වයි. ඔවුන් පිළිබඳ ඕනෑකමකින් යොදා ගනී. | | | | |
| 46. ක්‍රියා කටයුතු මනා සංවිධානය කිරීමේ හැකියාවක් ඇත. ක්‍රියාවේ නිරත වීමට ද කැමතියි. | | | | |
| 47. අන්‍යයන් සමඟ සන්නිවේදනය කටයුතු කරයි. අන්‍ය අයගේ වලට ගරු කරයි. | | | | |
| 48. නිතරම සතුටින් සිටියි. තම පිළිබඳව පෘඪාවෙන් වන බවක් මුහුණෙන් පෙනෙයි. | | | | |
| 49. තමාගේ හැඟීම් මනාව පාලනය කරයි. (උදාහරණ- දුකක් වේදනාවක් ඇති වූ විටම වුවද විශාල පිරිසක් සිටින අවස්ථාවක හැකිමෙන් වැලකී අමාරුවෙන් දුරු වෙත සිටීම.) | | | | |
| 50. පිටත් වීමේ දී මුහුණ ඇමට සිදුවන හැඳුණු වලට ඔරොත්තු දෙයි. එකම පහසුවෙන් අවස්ථාවකුලුව හැඩ ගැසෙයි. | | | | |
| 51. මනසක (සිතෙහි ඇස්වන) වාචික හෝ දකින වැඩිපුර පිළිබඳව සාමාන්‍යම පහසුවෙන් හඳුනා ගනියි. (උදාහරණ- මුහුණ වෙරළක් කඩදවත් නොදුටු දරුවකු තම පින්තූරයකින් දැක ඇති හෝ මුහුණ වෙරළ පිළිබඳ අය ඇති තොරතුරු අනුව මුහුණ වෙරළ පිළිබඳ රූපයක් සිතෙහි ඇති කර ගනියි. මුහුණ වෙරළක් ගැබ්වීම දුටු දිනයක තම මවගේ රූපයට අනුව එය මුහුණ වෙරළ ලෙස හඳුනා ගනියි.) | | | | |

Appendix 5.9 Indicating the different ability domains and the items that fall under each domain of Parent Inventory for Finding Potential (PIP) form.

| | Items |
|----------------------------|--|
| Intellectual Domain | 1,2,3,4,5,6,7, 8,9,10,11,12, 13,14,15,16,17, 18,19,20,21,22 (No. of items = 22) |
| Academic Domain | 2,4,5,6,9,10, 13,15,17,18, 23, 24,25, 26, 27, 28, 29 (No. of items = 17) |
| Creative Domain | 2,6,7,9,10,12, 13,15,16,17,21, 22,27,29,30, 31,32,33,34,35, 36,37,38,39,40 (No. of items = 25) |
| Social Domain | 6,7,9,10,11, 14,16,17,20, 21,22,27,28, 31, 40,41,42, 43,44,45,46, 47,- 51 (No. of items=17) |
| Artistic Domain | 2,3,4,9,12,13, 16,17, 23,24, 25,26, 27, 29, 32, 38, 39, 51 (No. of items = 18) |

Appendix 5.10 The Above-level test papers. There were two above-level test papers, the Mathematics paper and the Sinhalese language paper.

Appendix 5.10.1 The Mathematics paper

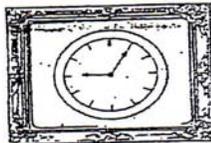
ගණිතය විෂය ඉහළ සාධනය මැනීම

2006 අගෝස්තු - ජෛෂ්ඨ වසර ප්‍රශ්න පත්‍රය ඇසුරින් සකස් කරන ලදී.

කාලය - පැය 01 මිනිත්තු 15

ප්‍රශ්න සියල්ලටම පිළිතුරු සපයන්න.

1. මිනිසුන් සතර දෙනෙකු එකම තැනින් පටන් ගෙන ඇවිදගෙන ගිය අතර පැය 4 කදී ඔවුන් ගමන් කළ දුර කිලෝමීටර් 15 ක් විය. පැය එකක් තුළ එක් මිනිසෙකු ඇවිද ගිය දුර කොපමණද?
 - (1) කිලෝමීටර් 1 කි.
 - (2) කිලෝමීටර් 4 කි.
 - (3) කිලෝමීටර් 5 කි.
2. මීටර 4 ක් දිග මීටර 4 ක් උස බිත්තියක ගෑමට සිත්ත ලීටර් දෙකක් අවශ්‍ය වේ. මීටර 8 ක් දිග මීටර 1 ක් උස එවැනිම බිත්තියක ගෑමට සිත්ත ලීටර් කීයක් අවශ්‍ය වේද?
 - (1) ලීටර් 1 යි.
 - (2) ලීටර් 2 යි.
 - (3) ලීටර් 4 යි.
3. කැඩපතක් තුළින් ඔරලෝසුවක් පෙනෙන ආකාරය පහත රූපයෙන් දැක්වේ. එම ඔරලෝසුවේ සත්‍ය වේලාව කීය ද?
 - (1) 2.55
 - (2) 3.05
 - (3) 9.05



- (1) 2.55
- (2) 3.05
- (3) 9.05

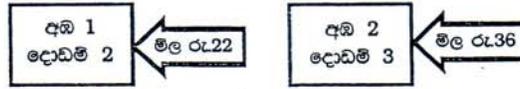
4. ගොඩනැගිල්ලේ පහත සඳහන් පියවර දැන යටතේ ඉදි කිරීමට සැලසුම් කර තිබේ.

| පියවර | ගතවන කාලය |
|-------|------------------------|
| 1 | අවුරුදු 2 යි |
| 2 | පියවර 1 මෙන් දෙගුණයකි. |
| 3 | පියවර 1 මෙන් බාහයකි. |

ගොඩනැගිල්ල ඉදි කිරීම 2004 වසරේ දී අරම්භ කළේ නම් එය හිමි කළ හැකි වන්නේ කුමන වසරේදී ද?

- (1) 2010
- (2) 2011
- (3) 2012

◆ පහත සඳහන් සටහන ඇසුරෙන් 5 හා 6 ප්‍රශ්න වලට පිළිතුරු සපයන්න.



5. අඹ හෙඩ් 3 ක හා දොඩම් හෙඩ් 5 ක මිල කීයද?
 (1) රුපියල් 44 (2) රුපියල් 58 (3) රුපියල් 66
6. අඹ හෙඩ් 1 ක හා දොඩම් හෙඩ් 1 ක මිල කීයද?
 (1) රුපියල් 11 (2) රුපියල් 14 (3) රුපියල් 18

7. එක හා දෙක තරුදිවල ඇති ද්‍රව්‍ය සහ ඒවායේ බරවල එකතුව නිරීක්ෂණය කරන්න. තුන්වන තරුදියේ ඇති ද්‍රව්‍ය බර කිලෝග්‍රෑම් කීය ද?

- (1) තරුදිය (2) තරුදිය (3) තාරුදිය



කිලෝග්‍රෑම් 6

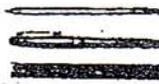


කිලෝග්‍රෑම් 8



කිලෝග්‍රෑම්

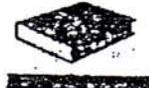
8. පහත දී ඇති ද්‍රව්‍ය වල මිල ගණන් වල එකතුව බලා පොහොසත් මිල කීයදැයි සොයන්න.



රුපියල් 35



රුපියල් 60



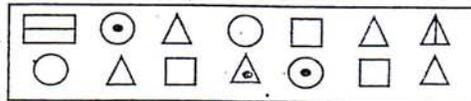
රුපියල් 49

පොහොසත් මිල රුපියල්

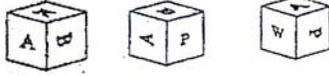
9. මෙහි වැඩිම වාර ගණනක් සඳහන් වන ඉලක්කම් කුමක්ද?

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 8 | 5 | 3 | 8 | 2 | 6 | 5 |
| 4 | 3 | 4 | 2 | 9 | 6 | 3 | 2 |

10. මෙහි වැඩිම වාර ගණනක් යෙදී ඇති හැඩය කුමක්ද?

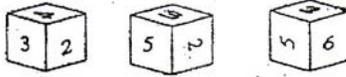


11. එකම ආකෘතියක විවිධ පැති මෙහි දැක්වේ.



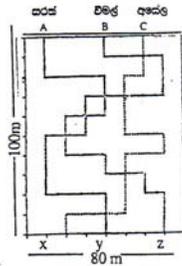
W අකුරට විරුද්ධ පැත්තේ ඇති අකුර කුමක්ද?

12. එකම ආකෘතියක විවිධ පැති මෙහි දැක්වේ.



6 ඉලක්කමට විරුද්ධ පැත්තේ ඇති ඉලක්කම් කුමක්ද?

- ♦ පහත දැක්වෙන්නේ සරත්, විමල්, අනේල සහ හිඳෙනා වනාන්තම් පිණිස ඇවිදීමට යොදා ගන්නා ගමන් පථ කුහකි. පුද්ගලයන් හිඳෙනා යොදා ගන්නා ගමන් පථවල ආරම්භක A, B, C සහ අක්ෂර වලින් ද අවසානක X, Y, Z සහ අක්ෂර වලින් ද දැක්වෙයි.



- 13 i මේ පුද්ගලයින් හිඳෙනා අතුරින් කවරක් දිග වැඩිම ගමන් පථයේ ගමන් කරයිද?
- ii මේ පුද්ගලයින් හිඳෙනා මෙම ගමන් පථ තුනේ ගමන් කරන විට වැඩිම වාර ගණනක් සම් වීම් පසට පැරෙන පැහැත්තා කවුද?

- 14 කතිර හොඩිවලි තුනක්, රටාවකට අනුව පහත කොටු තුළ ඇතුළු කර. එම රටාවට අනුව ඊළඟ කොටුවේ කතිර අඳින්න.

| | | | | |
|---|---|---|---|---|
| x | x | x | x | x |
| x | x | x | x | x |
| x | x | x | x | x |
| x | x | x | x | x |

| | | | |
|---|---|---|---|
| x | x | x | x |
| x | x | x | x |
| x | x | x | x |

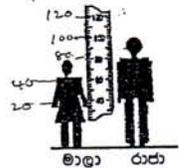
| | | |
|---|---|---|
| x | x | x |
| x | x | x |

- 15 එකතු කරන්න. :- $\frac{1}{4} + \frac{3}{8}$

- 16 භාජනයක් පිරවීමට ජලය 5l 540 ml පරිමාවක් අවශ්‍ය ය. එවැනි භාජන 4 ක් පිරවීමට අවශ්‍ය ජලය පරිමාව කොපමණ ද?

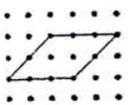
.....

17. රූපයේ පෙන්වා ඇති සෙන්ටිමීටර පරිමාණයට අනුව මාලාව වැඩියෙන් රාජා කොපමණ උස ද?



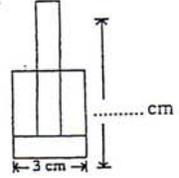
.....

18. පරතරය 1 cm වන පරිදි ඇණ හසා ඇති නාඤ්ඤ ප්‍රවර්තක රූපයේ පෙන්වා ඇත. සිහින් රවුර පටියක් ඇණ වටා යැවීමෙන් නිර්මාණය කර ඇති හැඩයේ වර්ගඵලය කොපමණ ද?



.....

- 19 සනකාන හැඩයෙන් යුත් එක සමාන ශ්‍රී කුට්ටි 5 ක් පෙන්වා ඇති පරිදි එක මත එක තැබීමෙන් නිර්මාණය කළ හැඩයක් රූපයේ දැක්වේ. එහි පතුලේ දිග 3 cm කි. එහි උස කොපමණ දැයි හිස්තැනෙහි ලියන්න.



20 වත්තරා විදුහලක සිසුන්ගෙන් ඔවුන් විඳින ම කැමති ක්‍රීඩාව පිළිබඳ විමසීමක් කරන ලදී. විමසීම් හෙළි වූ තොරතුරු පහත වගුවේ දැක්වේ.

| ක්‍රීඩාව | සිසු සංඛ්‍යාව | |
|-------------|---------------|--------|
| | පිරිමි | ගැහැනු |
| ක්‍රිකට් | 75 | 57 |
| බැඩ්මින්ටන් | 85 | 104 |
| නෙට්බෝල් | 0 | 139 |
| චොලි බෝල් | 90 | 0 |

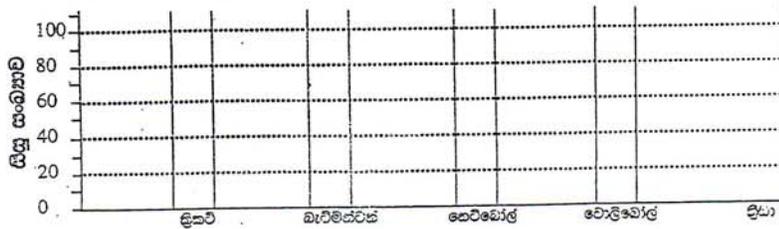
(i) ක්‍රිකට් ක්‍රීඩාවට කැමති මුළු සිසු සංඛ්‍යාව කීය ද?

(ii) වගුවේ සඳහන් මුළු ගැහැනු සිසු සංඛ්‍යාව කීයද ?

(iii) බැඩ්මින්ටන් ක්‍රීඩාවට කැමති ගැහැනු සිසු සංඛ්‍යාව සහ පිරිමි සිසු සංඛ්‍යාව අතර වෙනස කීය ද?

(iv) මෙහි සිසුන් අතර විඛාදය ජනප්‍රිය ක්‍රීඩාව කුමක් ද?

(v) එක් එක් ක්‍රීඩාවට කැමති පිරිමි සිසු සංඛ්‍යා දැක්වෙන ස්තම්භ ප්‍රස්ථාරයක් අඳින්න. ස්තම්භ අඳුරු කරන්න.



21. ළමයෙකුට දිනපතා උදේට සහ සවසට චිස්කෝතු 3 බැගින් කෑමට දෙනු ලැබේ. චිස්කෝතු 72 ක පැකට්ටුවක් මේ සඳහා දින කීයකට පෑවේ ද?

22. ළමයා ස්ථානයකට පස්වරු 12.50 ට පැමිණීමට නියමිත ළමයා මිනිත්තු 15 ක් පමා වන බව දැනුණ දෙන ලදී. ඒ අනුව ළමයා පැමිණෙනු ඇත්තේ කීයට ද?

23. කෙසෙල් ගෙඩි 1 Kg ක් රූපියල් 40.00 ක් වේ. 1 Kg 250 g බර කෙසෙල් ගෙඩි ඇවරියක් සඳහා ගෙවිය යුතු මුදල කීය ද?

24. අභ්‍යන්ත පොත් 321 ක් පත්ති තුනක් ක් අතර සමච්ච බෙදන ලදී. එක් පත්තියකට ලැබුණු පොත් සංඛ්‍යාව කීය ද?

Appendix 5.10.2 The Sinhalese language paper

මව්බස විෂය ඉහළ සාධනය මැනීම

2008 අගෝස්තු- ඔක්තෝබර් විභාග ප්‍රශ්න පත්‍රය ඇසුරින් සකස් කරන ලදී.

කාලය - පැය 01 මිනිත්තු 15

ප්‍රශ්න සියල්ලටම පිළිතුරු සපයන්න.

1 පහත ආකාරයට කවි පෙළ කියවන්න.

| | | |
|---|---|---|
| සමන් පිවිට මල් ඉතිරුණු නිල් තණ කොළ පිරිමිනියක් වනෙයි අහස අත්ත බලනු කොච්චර ලස්සනද රැට | බකමුණෝ පියාබිඬි අතින් කුරුල්ලෝ නිදිති බෝ අතුච්ච වල්ලි ගෙන මා වවුලෝ කෑ ගසති | මගේ සුරතල් අක්කගේ මාලේ මුතු ඇට වාගේ මේ වැටෙන්නේ පිණි බින්නද සැමු වකක් ඒ වාගේ |
|---|---|---|

(ලමා කවිය :- ඇස් මහින්ද හිමි)

කවි පෙළ ඇසුරින් අංක (i) සිට (x) තෙක් ප්‍රශ්න වලට පිළිතුරු සපයන්න.

- (i) කවිය "ලස්සන" යැයි කියන්නේ කුමකටද?.....
- (ii) කවි පෙළෙහි, අවදියෙන් සිටින බව සඳහන් සහකෘතීන් කරන්න.
.....
- (iii) මෙහි සඳහන් ප්‍රාණවාවී බහු වචන නාමපදයක් ලියන්න.
.....
- (iv) මෙහි සඳහන් අප්‍රාණවාවී බහු වචන නාමපදයක් ලියන්න.
.....
- (v) මෙහි ඇතුළත් උපමාවක් ලියන්න.
.....
- (vi) කවි පෙළෙහි ආකාරයට විශේෂණ පදයක් තෝරා ලියන්න.
.....
- (vii) මෙහි ඇති සිඳි ලිංග නෟම පදය කුමක්ද?
.....
- (ix) "කුරුල්ලෝ නිදිති" යන්න වික වචනයට හරවා ලියන්න.
.....
- (x) සැබවින්ම කළ නොහැක් දෙයක් සඳහා පත්පියෙහි සඳහන් වෙයි. ඒ කුමක්ද?
.....

2. වචන ගලපා අර්ථවත් වැඩි ගොඩනගන්න.

(i) වැඩි / ජනකතා / රැස් / ආශ්‍රිත / කරයි / තරිඳු

(ii) මාරුවීමට / කත / භාවිත / ඉර / කරමු / පාර / නිතර

3. පහත සඳහන් යෙදුම් වල අදහස ලියන්න.

(i) මීයට පිම්බා වගේ :-

(ii) ගලේ කෙටුව අතුරක් වගේ :-

4. හිස්තැනට ගැලපෙන නිවැරදි අක්ෂර වින්‍යාසය සහිත වචනය වරහන තුළින් තෝරා ලියන්න.

(i) පිපුණු දිවා සඳහා කඩල, මුංඇට ආදිය ද ගෙන වගි.

(හෝජනය, බෝජනය, හෝජණය, බෝජණය)

(ii) පසුතිය වසරේ ලංකා වටයට තේරී පත් වූ ක්‍රීඩක ක්‍රීඩිකාවෝ ද මෙම උත්සවයට සහභාගී වූහ.

(සමස්ථ, සමස්ත, සමස්ත, සමස්ත.)

(iii) නිතර..... පරිහරණය කිරීමෙන් උනුම වැඩෙයි.

(පුස්තකාලය, පුස්තකාලය, පුස්තකාලය, පුස්තකාලය)

► පහත සඳහන් කවිය කියවා 5 සහ 6 ප්‍රශ්න වලට පිළිතුරු සපයන්න.

| | |
|---------------|--------|
| උන ඉගෙන | ගත්තම |
| තමයි කෙනෙකුගෙ | වත්තම |
| ගුණ නුවණ | උක්කම |
| බබට සලකයි රටේ | මත්කොම |

5 කෙනෙකුගේ වත්තම වන්නේ කුමක් ද?

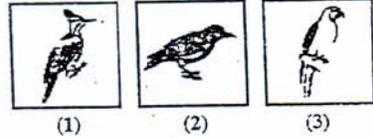
(1) ඉගෙන ගත් දෙය (2) ගුණ නුවණ (3) හොඳ ගසි ගුණ

6 අනුන්ගෙන් සැලකිලි ලබා ගැනීමට ඇති කර ගත යුතු ගුණාංගය කුමක් ද?

(1) හොඳින් ඉගෙන ගැනීම (2) ගුණ නුවණ වැඩීම (3) සංවර්ධන කැපවීම

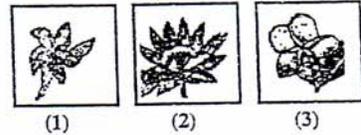
7. කවියෙන් විස්තර කෙරෙන පක්ෂියා තෝරන්න.

අතර පිණිස පලතුරු කන
 අතයේ වේගයෙන් සරණා
 ගත කොළ පාවිච්චි යුතු වන
 ධුරුල්ලෙක්ය වී දැන මැන

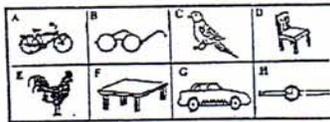


8. කවියෙන් විස්තර කෙරෙන මල තෝරන්න.

උදයේ හිරු රැසට පිපෙන
 දියේ දියලෙන සවස මියෙන
 සුවිඳු හමන සිත සනසන
 මලක් වේය දැන පිතවන



9. පහත කොටු තුළ ඇති රූප බලන්න. එක් එක් රූපය සඳහා ඉංග්‍රීසි අකුරු කොටු තුළ යොදා ඇත.



උදාහරණය බලා හොඳම සම්පන්නතාවය ආක්ෂේපන පරිදි රූප යුගල කොට ඇති නිවැරදි පිළිතුර තෝරන්න.

උදාහරණ A : G

- (1) B : F, C : H, D : E
- (2) E : H, C : F, D : E
- (3) B : H, C : E, D : F

10. "හැඳෙන ගහ දෙපෙත්තෙන් ආනේ" යන්නෙහි අදහස කුමක් ද?

- (1) ගසක වැඩිම පැති දෙකෙන් හඳුනා ගත හැකි බව ය.
- (2) කෙනෙකු හොඳට හැඳෙනවා ද යන්න කුඩා කාලයේදී ම ආනගත හැකි බව ය.
- (3) ළමයෙකුගේ වැඩිමට කුඩා කාලයේදී හොඳින් උදව් කළ යුතු බව ය.

11. සුමනාත් ශ්‍රීලාත් කුඩා කල පටන්ම එකට හැඳුනු වැඩුනු යෙහෙළියන් දෙදෙනෙයි. මෑතක ජීවිතයට අලුතින් පැමිණි සුසිලා සමඟ සුමනා වැඩි නිතවත්කමින් ඇති කරගෙන තිබිණි. ජීවිතය හොඳින් සිරිපණය කරනු ප්‍රකාශය තෝරන්න.

- (1) ඉඳුරු දී මිරිස් ගත්තා වගෙයි.
- (2) වැල යන පැත්තට මැස්ස ගහන්නා වගෙයි.
- (3) කලින් ආ කණට වඩා පස්සේ ආ අඟ ග්‍රොකු උනා වගෙයි.

12. "රැන් ඇදීවිට ද බලකොයි නෑනෝ"

ගසට පලවිට ද බලකොයි නෑනෝ "

ඉහත කවිය ගායනා කරනු ලබන්නේ කිනම් ජන ක්‍රීඩාවේදී ද?

- (1) වච්චන් කෑම
- (2) තොයම් කැපීම
- (3) ඔලිඳු කෙළිය
- (4) කළකෙඩි කෙල්ලම්

13 පහත දැක්වෙන කොටස සියවස්ක.

පාසලේ උදය රැස්වීම ආරම්භයේ දී විදුහල්පතිතුමා මෙසේ ප්‍රකාශ කළේ ය.

" අද අපට හරිම සතුටු දවසක්. අප විදුහලයේ ශිෂ්‍යයෙකු විදුහලයට සිරිතියක් ලබා දෙමින් ජාත්‍යන්තර විශ්‍ර භාරගතයින් පළමුවැනි ස්ථානය ලබා තිබෙනවා. ඔහුට හිමි භ්‍යානය ලබා ගැනීම සදහා ජපානයට පැමිණෙන ලෙස ආරාධනයක් ද ලැබී තිබෙනවා." විදුහල්පතිතුමා මෙසේ පවසද්දී දැඩි නිශ්චයවදහාවයක් ඇති විය. නැවතත් කථාව ආරම්භ කළ විදුහල්පතිතුමා මෙසේ පැවසීය.

" ඒ වාසනාවන්ත දරුවා තමයි පස්වන ශ්‍රේණියේ ඉහෙක්‍රම ලබන පරිදු දේශප්‍රිය. විදුහල වෙනුවෙන් මා ඔහුට සුඛ පතනවා. මා දැන් ඒ සිරිතියේ ශිෂ්‍යයාට ඉදිරියට පැමිණෙන ලෙස ආරාධනා කරනවා. " නිශ්චයවදහාවය බිඳීමක් සියළු දෙනා අත්පොළසක් දෙන්නට වූහ.

පරිදු ඔබ හමි මෙම අවස්ථාවේ දී ඔබට ඇති වන හැඟීම් දැක්වෙන නිර්මාණාත්මක වාක්‍ය හතක් ලියන්න.

(වත් වත් වාක්‍යයක වචන හතරක්වත් ඇතුළත් විය යුතුය. එම වාක්‍යවල උත්ත ආඛ්‍යාන සම්බන්ධය නිවැරදි විය යුතුය.)

- (i)
- (ii)
- (iii)
- (iv)
- (v)
- (vi)

Appendix 5.11 pilot study

The pilot study aimed at several objectives. The instruments used for data collection under different objectives of this study were different. Therefore, the Objectives of the pilot test are different in accordance with the different instruments used in the study.

Objective 1 of the pilot study

The instrument used for Objective 2 of the main study is RSPM test which is a standardized test. Hence researcher did not verify the reliability or validity of the test. However, during the dynamic testing researcher used the items from Learning Potential Assessment Device [LPAD] and some items prepared by the researcher, which are analogues of RSPM for use in the metacognitive development in the selected students. Therefore, the pilot test was carried out to find out the effectiveness of intervention items and to find out whether the grade 4 children could answer the items of RSPM.

Objective 2 of the pilot study

The instrument for data collection for Objective 3 of the main study is PTSN Forms A and B, which were in English language and translated into Sinhalese language. This instrument is also a standard instrument used in several other studies; hence researcher did not verify the validity and reliability of the instrument. However, researcher conducted a pilot test to identify whether the translation affected its reliability, and whether the primary children were capable of responding to the instrument.

Objective 3 of the pilot study

PIP form [a rating scale] used for data collection for Objective 4, from the parents. Researcher was not able to recognize any research data on the validity or reliability of the instrument. Researcher translated the items of the PIP form into Sinhalese language. Therefore, it was also pilot-tested to find out the reliability of the instrument, and further, to find out the parents' capabilities in responding to the instrument.

The validity of any of the above instruments was not tested by pilot study, since at the end of the main study the validity of the instruments was to be examined by data triangulation.

Methodology of the pilot test

Methodology of the pilot test varied with the different objectives of the pilot test.

Methodology of data collection for Objective 1 of the pilot study

Pilot testing the intervention items

Under research Objective 2 of the main study Dynamic testing process was carried out. During the intervention period in dynamic testing some items of LPAD (Raven, 1979) and researcher made items were used for metacognitive intervention. The items used for this purpose are illustrated in Appendix 5.4. The Objective 1 of the pilot study is to identify the effectiveness of intervention items in metacognitive development and to find out the capability of responding to the items in RSPM test by the students of primary grade level in Sri Lanka.

Sample

The sample for the objective was 20 students of School K grade 4A, who were later included into the main study.

Instruments for data collection

The instrument for data collection was RSPM test and the intervention items.

Data collection procedure for objective 2 of the pilot study

The IQ of the students in the sample was pre-tested by RSPM test before the intervention. Then the intervention for metacognitive development was carried out by the researcher using the items illustrated in Appendix 5.4 for about one week. There was an experimental group (8 students) and control group (7 students) for the intervention. A pre-test was carried out to measure the IQ of students before the intervention. After about two weeks of the intervention a post-test was carried out with the samples in the control group and experimental group.

Presentation, analysis of data and discussion

The pre-test marks and post-test marks were examined by one-way analysis of ANOVA. The results showed a significant difference in mean values with .017 significance level. This shows significant increase in cognitive development after the intervention. Therefore, it could be concluded that the items used in the intervention

were successful in metacognitive development and also it was found that the primary level children in the sample were able to respond the RSPM items efficiently.

Objective 2 of the pilot study

To identify whether the translation affected its reliability, and whether the primary children are capable of responding to the instrument PTSN forms A and B.

Instruments for data collection

The instrument for data collection was PTSN forms translated into Sinhalese language. Along with PTSN forms, researcher used the list of Student Identification Numbers (SIN)

Sample

The sample for the objective was 20 students of School K grade 4A, who were later included into the main study.

Data collection procedure for objective 2 of the pilot study.

Since it was to identify the reliability of the PTSN forms the researcher administrated the PTSN forms at two instances with a time interval of one month to the same sample.

Students were instructed how to use the student identification numbers instead of names to nominate the suitable peers for each item. Same procedure was expected to be followed during the main study (discussed in section 5.2.6.3).

Presentation, analysis of data and discussion

During the presentation and analysis of the data, the same procedure that is expected to be followed during the main study (discussed in section 5.2.6.3, pp 91-93) was followed during the pilot study. The valid responses were selected according to the procedure discussed in section 5.2.6.3. Then the two data sheets for PTSN Forms A and B were created separately for 2 sets of data collected at two stages during the pilot study. Tables A5.11.1, A5.11.2, A5.11.3 and A5.11.4, the data sheets illustrate the responses for each item of each student for PTNS forms A and B at stage 1 of the pilot test. The respective data of Stage 2 is included into Tables A6.5.9, A6.5.21, A6.6.9 and A6.6.21 (these data were included in the final data analysis). Tables A5.11.5, A5.11.6 the final data sheets illustrate the 1st, 2nd, 3rd and 4th choices for each item, and the sum and the talent score for each item of each student for PTNS forms A and B at stage 1 of the pilot test. Final data sheets of stage 2 appear as Tables

A6.7.9 and A6.7.21 (included in the final study). Finally, with the help of the data in the four final data sheets, a comparison of first four places of sub-group scores of both stage1 and 2 for Forms A and B were examined separately. The comparison illustrated in the Tables A5.11.7 and A5.11.8

Table A5.11.1 Data sheet illustrating responses to each item of PTNS Form A - pilot test stage 1

| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | Teacher |
|----------|-----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------------|
| Item | Pts | M | M | M | M | M | M | M | M | M | M | F | F | F | F | F | F | F | F | F | F | F | M | nomination |
| 1 | 3 | 20 | 15 | 14 | 4 | 18 | | 4 | 15 | 18 | | 18 | 20 | 15 | 18 | 12 | 15 | 15 | 18 | 15 | 20 | 4 | 14 | 15 |
| | 2 | 4 | 18 | 15 | 20 | 15 | | 5 | 20 | 20 | | 11 | 18 | 18 | 14 | 14 | 14 | 20 | 14 | 20 | 18 | 18 | 18 | 20 |
| | 1 | 18 | 20 | 18 | 14 | 4 | | 14 | 22 | 15 | | 15 | 4 | 3 | 11 | 15 | 18 | 18 | 11 | 18 | 14 | 14 | 15 | 4 |
| 2 | 3 | 4 | 7 | 3 | 4 | 5 | | 7 | 8 | 4 | | 4 | 4 | 18 | 18 | 4 | 14 | 20 | 18 | 14 | 4 | 4 | 4 | 2 |
| | 2 | 20 | 1 | 4 | 10 | 4 | | 14 | 4 | 22 | | 18 | 17 | 4 | 11 | 2 | 18 | 18 | 4 | 20 | 7 | 5 | 7 | 4 |
| | 1 | 18 | 4 | 18 | 8 | 22 | | 18 | 22 | 1 | | 14 | 18 | 3 | 14 | 18 | 2 | 15 | 14 | 18 | 22 | 7 | 5 | 15 |
| 3 | 3 | 7 | 4 | 4 | 4 | 3 | | 4 | 7 | 4 | | 4 | 20 | 20 | 4 | 4 | 7 | 15 | 4 | 20 | 20 | 7 | 22 | 4 |
| | 2 | 4 | 7 | 8 | 22 | 7 | | 7 | 5 | 7 | | 5 | 4 | 15 | 22 | 8 | 4 | 20 | 22 | 7 | 18 | 4 | 7 | 20 |
| | 1 | 3 | 5 | 3 | 3 | 8 | | 15 | 4 | 1 | | 22 | 13 | 7 | 7 | 7 | 3 | 7 | 7 | 15 | 4 | 22 | 4 | 15 |
| 4 | 3 | 4 | 2 | 3 | 4 | 5 | | 4 | 11 | 5 | | 11 | 4 | 13 | 4 | 3 | 3 | 0 | 4 | 3 | 18 | 3 | 10 | 4 |
| | 2 | 20 | 4 | 20 | 20 | 1 | | 15 | 18 | 4 | | 22 | 20 | 3 | 10 | 18 | 4 | 0 | 10 | 2 | 4 | 22 | 4 | 0 |
| | 1 | 18 | 20 | 15 | 0 | 2 | | 18 | 20 | 2 | | 2 | 7 | 4 | 22 | 2 | 18 | 0 | 22 | 18 | 2 | 5 | 3 | 0 |
| 5 | 3 | 7 | 18 | 14 | 14 | 7 | | 18 | 4 | 4 | | 18 | 4 | 3 | 18 | 15 | 16 | 15 | 18 | 18 | 15 | 15 | 4 | 15 |
| | 2 | 4 | 4 | 18 | 4 | 6 | | 4 | 14 | 16 | | 4 | 11 | 14 | 13 | 20 | 18 | 14 | 13 | 14 | 14 | 13 | 18 | 20 |
| | 1 | 22 | 20 | 22 | 3 | 0 | | 5 | 22 | 22 | | 15 | 17 | 15 | 20 | 18 | 14 | 12 | 20 | 7 | 20 | 18 | 20 | 4 |
| 6 | 3 | 14 | 15 | 15 | 4 | 15 | | 14 | 18 | 20 | | 18 | 18 | 15 | 14 | 15 | 18 | 15 | 18 | 15 | 20 | 15 | 20 | 15 |
| | 2 | 18 | 20 | 14 | 20 | 14 | | 18 | 20 | 4 | | 11 | 12 | 18 | 18 | 20 | 20 | 20 | 15 | 18 | 18 | 20 | 18 | 20 |
| | 1 | 20 | 18 | 18 | 18 | 18 | | 20 | 4 | 22 | | 20 | 15 | 13 | 20 | 4 | 15 | 18 | 14 | 20 | 15 | 14 | 22 | 18 |

| Table A5.11.1 Data sheet illustrating responses to each item of PTNS Form A - pilot test stage 1 | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------------------|
| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | Teacher nomination |
| Item | Pts | M | M | M | M | M | M | M | M | M | M | F | F | F | F | F | F | F | F | F | F | F | M | |
| | 3 | 18 | 20 | 4 | 4 | 15 | | 20 | 8 | 4 | | 11 | 20 | 13 | 14 | 15 | 15 | 4 | 18 | 14 | 4 | 15 | 4 | 4 |
| 7 | 2 | 14 | 4 | 3 | 18 | 4 | | 18 | 18 | 22 | | 4 | 17 | 15 | 18 | 20 | 14 | 18 | 14 | 18 | 18 | 4 | 5 | 15 |
| | 1 | 4 | 18 | 1 | 20 | 18 | | 14 | 4 | 2 | | 20 | 12 | 18 | 11 | 14 | 18 | 15 | 20 | 20 | 22 | 13 | 22 | 13 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 4 | 1 | 14 | 5 | 5 | | 4 | 18 | 9 | | 14 | 15 | 15 | 18 | 15 | 16 | 15 | 18 | 14 | 20 | 15 | 4 | 20 |
| 8 | 2 | 14 | 20 | 12 | 4 | 14 | | 14 | 15 | 7 | | 18 | 4 | 18 | 14 | 18 | 18 | 20 | 15 | 17 | 18 | 20 | 18 | 15 |
| | 1 | 18 | 4 | 17 | 18 | 18 | | 18 | 4 | 4 | | 11 | 18 | 13 | 22 | 20 | 20 | 12 | 4 | 15 | 4 | 4 | 15 | 18 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 4 | 20 | 15 | 14 | 5 | | 4 | 15 | 15 | | 18 | 18 | 20 | 18 | 15 | 15 | 15 | 18 | 15 | 18 | 15 | 15 | 15 |
| 9 | 2 | 14 | 15 | 14 | 13 | 4 | | 11 | 8 | 4 | | 20 | 15 | 15 | 14 | 20 | 20 | 20 | 20 | 18 | 20 | 14 | 20 | 20 |
| | 1 | 18 | 18 | 20 | 4 | 1 | | 18 | 4 | 5 | | 7 | 20 | 4 | 11 | 22 | 18 | 14 | 15 | 20 | 4 | 18 | 18 | 18 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 4 | 2 | 4 | 4 | 4 | | 7 | 8 | 7 | | 10 | 4 | 4 | 4 | 7 | 4 | 3 | 10 | 4 | 4 | 8 | 22 | 4 |
| 10 | 2 | 22 | 1 | 2 | 7 | 7 | | 20 | 10 | 4 | | 7 | 7 | 3 | 22 | 20 | 7 | 7 | 4 | 7 | 1 | 4 | 4 | 0 |
| | 1 | 18 | 4 | 3 | 10 | 22 | | 18 | 4 | 9 | | 8 | 22 | 1 | 10 | 4 | 10 | 15 | 22 | 22 | 10 | 9 | 10 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 7 | 15 | 1 | 4 | 15 | | 1 | 14 | 4 | | 7 | 11 | 18 | 14 | 15 | 13 | 4 | 18 | 15 | 18 | 4 | 4 | 13 |
| 11 | 2 | 4 | 20 | 22 | 14 | 14 | | 14 | 5 | 20 | | 11 | 4 | 20 | 18 | 18 | 4 | 18 | 14 | 18 | 4 | 20 | 18 | 20 |
| | 1 | 18 | 4 | 15 | 15 | 18 | | 11 | 8 | 17 | | 18 | 20 | 15 | 20 | 19 | 18 | 17 | 20 | 14 | 20 | 18 | 22 | 18 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 18 | 18 | 15 | 15 | 4 | | 11 | 4 | 15 | | 15 | 4 | 15 | 4 | 15 | 15 | 15 | 18 | 14 | 4 | 15 | 20 | 20 |
| 12 | 2 | 22 | 20 | 14 | 14 | 15 | | 18 | 8 | 7 | | 18 | 12 | 13 | 14 | 22 | 14 | 14 | 22 | 18 | 18 | 14 | 18 | 4 |
| | 1 | 15 | 11 | 3 | 4 | 20 | | 14 | 14 | 1 | | 11 | 20 | 18 | 18 | 11 | 18 | 20 | 10 | 20 | 20 | 18 | 14 | 15 |

Table A5.11.2. Data sheet for total number of 1st, 2nd, and 3rd choices of each item, sum and talent score of each item of each student - Form A-St

| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|------|---------|---|----|----|------|----|---|----|---|---|----|----|----|----|------|-------|----|----|-------|----|-------|----|----|
| Item | Pts | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 8 | 0 | 0 | 1 | 0 | 6 | 0 | 0 |
| 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 8 | 0 | 7 | 0 | 0 |
| | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 0 | 3 | 0 | 3 | 0 | 0 |
| | sum | | | | 15 | | | | | | | | | | 10 | 35 | | | 22 | | 35 | | |
| | tal.sco | | | | 25 | | | | | | | | | | 17 | 58 | | | 37 | | 58 | | |
| | 3 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 6 | 0 | 0 | 0 | 0 |
| 2 | 2 | 1 | 1 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 5 | 0 | 2 | 0 | 3 |
| | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| | sum | | | | 33 | | | 6 | 5 | | | | | | 11 | 7 | | | 29 | | | | 9 |
| | tal.sco | | | | 54 | | | 10 | 8 | | | | | | 18 | 12 | | | 48 | | | | 15 |
| | 3 | 0 | 0 | 1 | 6 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 5 | 0 | 2 |
| 3 | 2 | 0 | 0 | 1 | 7 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| | 1 | 1 | 0 | 1 | 2 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 3 |
| | sum | | | 6 | 34 | 7 | | 20 | | | | | | | | 15 | | | | | 19 | | 17 |
| | tal.sco | | | | 57 | 12 | | 33 | | | | | | | | 25 | | | | | 32 | | 28 |
| | 3 | 0 | 1 | 3 | 6 | 3 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 4 | 2 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 2 |
| | 1 | 0 | 8 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| | sum | | 11 | 11 | 35 | 12 | | | | | 14 | | | | | | | | | | 20 | | |
| | tal.sco | | 18 | 18 | 58 | 20 | | | | | 23 | | | | | | | | | | 33 | | |
| | 3 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 1 | 1 | 4 | 0 | 1 | 0 | 1 |
| 5 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 0 | 0 | 7 | 0 | 2 | 0 | 1 |
| | 1 | 1 | 1 | 1 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 1 |
| | sum | | | | 16 | | | | | | | | | | 23 | 13 | | | 27 | | 12 | | |
| | tal.sco | | | | 27 | | | | | | | | | | 38 | 23 | | | 45 | | 20 | | |
| | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 5 | 0 | 10 | 0 | 0 |
| 6 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 6 | 0 | 0 | 5 | 0 | 4 | 0 | 1 |
| | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 5 | 0 | 0 | 3 | 0 | 4 | 0 | 3 |
| sum | tal.sco | | | | 6/10 | | | | | | | | | | 8/13 | 26/43 | | | 28/47 | | 42/70 | | |

Table A5.11.2. Data sheet for total number of 1st, 2nd, and 3rd choices of each item, sum and talent score of each item of each student - Form A

| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|------|---------|---|---|----|-------|---|---|----|---|---|----|------|----|----|-------|-------|----|----|-------|----|-------|----|----|
| Item | Pts | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| | 3 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 4 | 0 | 4 | 0 | 0 |
| 7 | 2 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 1 | 4 | 0 | 1 | 0 | 2 |
| | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 0 | 6 | 0 | 3 |
| | sum | | | | 18 | | | | | | | | | | 14 | 20 | | | 25 | | 20 | | 7 |
| | tal.sco | | | | 30 | | | | | | | | | | 23 | 33 | | | 42 | | 33 | | 12 |
| | 3 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 5 | 1 | 1 | 3 | 0 | 2 | 0 | 0 |
| 8 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 5 | 0 | 3 | 0 | 1 |
| | 1 | 0 | 1 | 0 | 4 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 4 | 0 | 4 | 0 | 0 |
| | sum | | | | 17 | | | | | | | | | | 14 | 22 | | | 23 | | 16 | | |
| | tal.sco | | | | 28 | | | | | | | | | | 23 | 37 | | | 38 | | 27 | | |
| | 3 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 0 | 4 | 0 | 2 | 0 | 1 |
| 9 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 5 | 0 | 5 | 0 | 0 |
| | 1 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 1 | 0 | 0 | 2 | 0 | 4 |
| | sum | | | | 19 | | | | | | | | | | 11 | 32 | | | 22 | | 18 | | 7 |
| | tal.sco | | | | 32 | | | | | | | | | | 18 | 53 | | | 37 | | 30 | | 12 |
| | 3 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 10 | 2 | 1 | 0 | 4 | 5 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 2 |
| | 1 | 1 | 1 | 1 | 0 | 6 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| | sum | | | 9 | 43 | | | 10 | | | 9 | | | | | | | | | | 8 | | 15 |
| | tal.sco | | | 15 | 72 | | | 17 | | | 15 | | | | | | | | | | 13 | | 25 |
| | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 4 | 0 | 0 | 3 | 0 | 4 | 0 | 1 |
| 11 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 0 | 0 | 7 | 0 | 2 | 0 | 1 |
| | 1 | 2 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 3 | 0 | 4 | 0 | 2 |
| | sum | | | | 22 | | | | | | | | | | 12 | 19 | | | 26 | | 20 | | 7 |
| | tal.sco | | | | 37 | | | | | | | | | | 20 | 32 | | | 43 | | 33 | | 12 |
| | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 5 | 0 | 0 | 6 | 0 | 1 | 0 | 1 |
| 12 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 3 | 0 | 0 | 6 | 0 | 6 | 0 | 0 |
| | 1 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 4 | 0 | 4 | 0 | 2 |
| sum | tal.sco | | | | 12/20 | | | | | | | 8/13 | | | 12/20 | 25/42 | | | 34/57 | | 19/32 | | |

| Table A5.11.3 Data sheet illustrating responses to each item of PTNS Form B - pilot test stage 1 | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------------------|
| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | Teacher Nominations |
| Item | Pts | M | M | M | M | M | M | M | M | M | M | F | F | F | F | F | F | F | F | F | F | F | M | |
| | 3 | 9 | 9 | 9 | 9 | 9 | | 9 | 9 | 9 | | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 5 |
| 1 | 2 | 2 | 1 | 1 | 2 | 2 | | 2 | 1 | 2 | | 11 | 2 | 2 | 2 | 2 | 7 | 11 | 2 | 2 | 2 | 2 | 7 | 4 |
| | 1 | 7 | 7 | 7 | 1 | 7 | | 7 | 7 | 7 | | 7 | 7 | 7 | 7 | 7 | 2 | 7 | 7 | 7 | 7 | 7 | 2 | 18 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 18 | 20 | 3 | 4 | 3 | | 22 | 4 | 18 | | 14 | 20 | 3 | 20 | 20 | 18 | 20 | 18 | 20 | 20 | 20 | 20 | 15 |
| 2 | 2 | 4 | 3 | 20 | 3 | 7 | | 4 | 3 | 22 | | 18 | 3 | 13 | 18 | 3 | 20 | 3 | 4 | 3 | 18 | 18 | 4 | 20 |
| | 1 | 3 | 15 | 4 | 18 | 13 | | 3 | 18 | 15 | | 20 | 4 | 4 | 4 | 15 | 15 | 18 | 22 | 15 | 4 | 11 | 15 | 4 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 4 | 4 | 18 | 4 | 7 | | 4 | 18 | 7 | | 14 | 18 | 20 | 14 | 15 | 18 | 15 | 18 | 15 | 18 | 9 | 4 | 20 |
| 3 | 2 | 15 | 20 | 20 | 3 | 4 | | 15 | 20 | 9 | | 18 | 15 | 3 | 18 | 18 | 15 | 18 | 14 | 18 | 15 | 4 | 22 | 15 |
| | 1 | 22 | 18 | 4 | 18 | 1 | | 18 | 14 | 1 | | 11 | 4 | 13 | 4 | 4 | 22 | 14 | 4 | 20 | 20 | 3 | 18 | 13 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 2 | 2 | 3 | 4 | 2 | | 15 | 2 | 4 | | 11 | 15 | 13 | 20 | 20 | 20 | 20 | 2 | 15 | 20 | 20 | 22 | 2 |
| 4 | 2 | 1 | 3 | 15 | 3 | 3 | | 1 | 4 | 15 | | 2 | 20 | 3 | 18 | 15 | 2 | 15 | 18 | 20 | 18 | 18 | 3 | 3 |
| | 1 | 3 | 20 | 20 | 2 | 0 | | 5 | 1 | 20 | | 18 | 4 | 15 | 4 | 18 | 4 | 2 | 14 | 2 | 2 | 2 | 2 | 20 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 20 | 11 | 14 | 18 | 18 | | 4 | 11 | 15 | | 18 | 11 | 11 | 18 | 11 | 18 | 11 | 18 | 11 | 11 | 4 | 18 | 11 |
| 5 | 2 | 14 | 15 | 4 | 4 | 15 | | 5 | 8 | 20 | | 11 | 15 | 13 | 14 | 18 | 11 | 20 | 14 | 15 | 18 | 7 | 20 | 15 |
| | 1 | 15 | 2 | 15 | 14 | 14 | | 11 | 18 | 14 | | 14 | 18 | 3 | 11 | 15 | 3 | 17 | 11 | 14 | 20 | 3 | 15 | 20 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 7 | 1 | 8 | 4 | 18 | | 7 | 18 | 1 | | 11 | 4 | 14 | 18 | 13 | 20 | 12 | 18 | 14 | 14 | 19 | 4 | 14 |
| 6 | 2 | 14 | 4 | 14 | 3 | 7 | | 4 | 21 | 5 | | 20 | 14 | 18 | 14 | 14 | 18 | 14 | 14 | 17 | 18 | 14 | 3 | 18 |
| | 1 | 3 | 18 | 13 | 22 | 4 | | 5 | 5 | 7 | | 18 | 18 | 3 | 4 | 18 | 4 | 4 | 4 | 21 | 20 | 18 | 14 | 20 |

| Table A5.11.3 Data sheet illustrating responses to each item of PTNS Form B - pilot test stage 1 | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|----|----|----|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------------|
| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | Teacher |
| Item | Pts | M | M | M | M | M | M | M | M | M | M | F | F | F | F | F | F | F | F | F | F | F | M | Nomination |
| | 3 | 18 | 15 | 20 | 4 | 4 | | 18 | 4 | 9 | | 14 | 15 | 15 | 18 | 18 | 18 | 12 | 18 | 4 | 18 | 18 | 14 | 15 |
| 7 | 2 | 20 | 20 | 15 | 20 | 1 | | 4 | 20 | 4 | | 18 | 18 | 20 | 20 | 15 | 14 | 15 | 4 | 20 | 4 | 4 | 4 | 4 |
| | 1 | 14 | 5 | 3 | 3 | 20 | | 20 | 15 | 20 | | 20 | 4 | 18 | 4 | 20 | 15 | 20 | 20 | 15 | 15 | 20 | 20 | 20 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 4 | 2 | 3 | 4 | 5 | | 1 | 16 | 1 | | 5 | 16 | 16 | 2 | 5 | 16 | 16 | 5 | 16 | 16 | 16 | 5 | 5 |
| 8 | 2 | 16 | 5 | 1 | 2 | 3 | | 5 | 3 | 2 | | 20 | 1 | 5 | 3 | 7 | 15 | 18 | 22 | 13 | 20 | 4 | 1 | 16 |
| | 1 | 14 | 1 | 2 | 0 | 4 | | 4 | 5 | 5 | | 18 | 7 | 3 | 16 | 16 | 4 | 14 | 18 | 14 | 4 | 3 | 2 | 18 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 20 | 1 | 20 | 2 | 20 | | 4 | 15 | 9 | | 15 | 15 | 13 | 18 | 15 | 15 | 18 | 15 | 20 | 18 | 15 | 15 | |
| 9 | 2 | 14 | 15 | 4 | 4 | 2 | | 18 | 14 | 8 | | 14 | 18 | 3 | 4 | 18 | 20 | 18 | 15 | 20 | 18 | 20 | 18 | 20 |
| | 1 | 15 | 2 | 5 | 22 | 7 | | 5 | 20 | 2 | | 20 | 11 | 15 | 14 | 20 | 14 | 13 | 11 | 18 | 4 | 15 | 28 | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 18 | 15 | 14 | 18 | 18 | | 18 | 18 | 15 | | 11 | 18 | 20 | 18 | 15 | 14 | 15 | 18 | 15 | 20 | 18 | 14 | 15 |
| 10 | 2 | 4 | 20 | 15 | 17 | 20 | | 14 | 14 | 4 | | 18 | 15 | 15 | 20 | 18 | 15 | 18 | 14 | 18 | 18 | 14 | 15 | 18 |
| | 1 | 20 | 11 | 20 | 20 | 14 | | 30 | 13 | 3 | | 20 | 14 | 18 | 14 | 19 | 19 | 19 | 20 | 19 | 4 | 11 | 18 | 20 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 4 | 20 | 14 | 4 | 5 | | 4 | 11 | 4 | | 20 | 20 | 13 | 4 | 14 | 20 | 20 | 18 | 15 | 20 | 18 | 20 | 20 |
| 11 | 2 | 11 | 21 | 20 | 22 | 10 | | 11 | 3 | 2 | | 17 | 15 | 11 | 14 | 15 | 4 | 15 | 14 | 18 | 18 | 4 | 4 | 4 |
| | 1 | 22 | 0 | 15 | 3 | 4 | | 13 | 22 | 20 | | 12 | 17 | 15 | 18 | 18 | 18 | 10 | 20 | 14 | 4 | 14 | 22 | 15 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 7 | 1 | 3 | 4 | 1 | | 7 | 16 | 1 | | 11 | 1 | 13 | 16 | 16 | 4 | 13 | 16 | 18 | 4 | 15 | 22 | 16 |
| 12 | 2 | 1 | 2 | 1 | 3 | 2 | | 1 | 15 | 2 | | 16 | 7 | 16 | 4 | 7 | 14 | 14 | 18 | 15 | 20 | 2 | 4 | 18 |
| | 1 | 5 | 5 | 2 | 15 | 7 | | 5 | 22 | 9 | | 22 | 2 | 3 | 14 | 2 | 20 | 20 | 22 | 2 | 18 | 4 | 7 | 13 |
| | | | | | | | | | | | | | | | | | | | | | | | | |

| Table A5.11.4. Data sheet for total number of 1st, 2nd, and 3rd choices of each item, sum and talent score of each item of each student - Form B pilot stage 1 | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------|----|----|----|----|---|---|----|---|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| Item | Pts | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 2 | 3 | 13 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Total | 7 | 28 | | | | | 21 | | 60 | | | | | | | | | | | | | |
| | tal. score | 12 | 46 | | | | | 35 | | 100 | | | | | | | | | | | | | |
| | 3 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 9 | 0 | 1 |
| 2 | 2 | 0 | 0 | 7 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 1 |
| | 1 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 0 | 3 | 0 | 1 | 0 | 1 |
| | Total | | | 25 | 19 | | | | | | | | | | | | | | 23 | | 32 | | |
| | tal. score | | | 42 | 32 | | | | | | | | | | | | | | 38 | | 53 | | |
| | 3 | 0 | 0 | 0 | 5 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 6 | 0 | 1 | 0 | 0 |
| 3 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 5 | 0 | 3 | 0 | 1 |
| | 1 | 2 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 2 |
| | Total | | | | 24 | | | | | | | | | | 10 | 19 | | | 32 | | 11 | | 4 |
| | tal. score | | | | 40 | | | | | | | | | | 17 | 32 | | | 53 | | 18 | | |
| | 3 | 0 | 5 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 6 | 0 | 1 |
| 4 | 2 | 2 | 2 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 2 | 0 | 0 |
| | 1 | 1 | 6 | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 3 | 0 | 0 |
| | Total | | 25 | 14 | 11 | | | | | | | | | | | 18 | | | 10 | | 25 | | |
| | tal. score | | 42 | 23 | 18 | | | | | | | | | | | 30 | | | 17 | | 42 | | |
| | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 1 | 0 | 0 | 7 | 0 | 1 | 0 | 0 |
| 5 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 3 | 4 | 0 | 0 | 2 | 0 | 3 | 0 | 0 |
| | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 5 | 4 | 0 | 1 | 2 | 0 | 1 | 0 | 0 |
| | Total | | | | 10 | | | | | | 31 | | | | | | | | 27 | | 10 | | |
| | tal. score | | | | 17 | | | | | | 52 | | | | | | | | 45 | | 17 | | |
| | 3 | 2 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 |
| 6 | 2 | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 3 | 0 | 1 | 1 | 0 |
| | 1 | 0 | 0 | 2 | 5 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 5 | 0 | 1 | 1 | 1 |
| | Total | | | | 18 | | | | | | | | | | 26 | | | | 23 | | | | |
| | tal. score | | | | 30 | | | | | | | | | | 43 | | | | 38 | | | | |

| Table A5.11.4. Data sheet for total number of 1st, 2nd, and 3rd choices of each item, sum and talent score of each item of each student - Form B pilot stage | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------|----|----|----|----|----|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|
| SIN | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| Item | Pts | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 3 | 0 | 0 | 8 | 0 | 1 | 0 | 0 |
| 7 | 2 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 7 | 0 | 0 |
| | 1 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| | Total | | | | 26 | | | | | | | | | | 9 | 19 | | | 29 | | 20 | | |
| | tal. score | | | | 43 | | | | | | | | | | 15 | 32 | | | 48 | | 33 | | |
| | 3 | 2 | 2 | 1 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 2 | 3 | 2 | 3 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 1 |
| | 1 | 1 | 2 | 2 | 4 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 |
| | Total | 13 | 12 | 11 | 12 | 23 | | | | | | | | | | | 28 | | | | | | |
| | tal. score | 22 | 20 | 18 | 20 | 38 | | | | | | | | | | | 47 | | | | | | |
| | 3 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 0 | 3 | 0 | 4 | 0 | 0 |
| 9 | 2 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 6 | 0 | 3 | 0 | 0 |
| | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 3 | 0 | 0 | 1 | 0 | 3 | 0 | 1 |
| | Total | | | | 10 | | | | | | | | | | 31 | | | | 25 | | 21 | | |
| | tal. score | | | | 17 | | | | | | | | | | 52 | | | | 42 | | 35 | | |
| | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 5 | 0 | 0 | 9 | 0 | 2 | 0 | 0 |
| 10 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 5 | 0 | 1 | 5 | 0 | 3 | 0 | 0 |
| | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 4 | 5 | 0 | 0 |
| | Total | | | | | | | | | | | | | | 20 | 25 | | | 34 | | 17 | | |
| | tal. score | | | | | | | | | | | | | | 33 | 42 | | | 57 | | 28 | | |
| | 3 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 2 | 0 | 7 | 0 | 0 |
| 11 | 2 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 2 | 3 | 0 | 1 | 2 | 0 | 1 | 1 | 1 |
| | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 2 | 0 | 3 |
| | Total | | | | 20 | | | | | | | | | | 12 | 11 | | | 13 | | 25 | | |
| | tal. score | | | | 33 | | | | | | | | | | 20 | 18 | | | 22 | | 42 | | |
| | 3 | 4 | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 4 | 0 | 1 | 0 | 0 | 0 | 1 |
| 12 | 2 | 3 | 4 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 1 | 0 | 1 | 0 | 0 |
| | 1 | 0 | 4 | 1 | 1 | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 3 |
| | Total | 18 | 12 | | 14 | | | | | | | | | | | | 16 | | | | | | |
| | tal. score | 30 | 20 | | 23 | | | | | | | | | | | | 27 | | | | | | |

Table A 5.11.5 Talent scores, subgroup scores and rankings of students for pilot test -stage 1 -

| Student Number | Self-Nominations | Academic | | | | | Mech-Tech | | | | | Drama | | | Socio-Affect | | | | |
|----------------|------------------|---------------|--------------|--------------|-----------------|----------------|-------------|---------------|--------------|----------------|-------------|----------|----------------|--------------|---------------|-----------|----------------|--|--|
| | | 1- Enclopedia | 6- Lightning | 7- Scientist | 12- Bright Idea | Subgroup score | 2- Handyman | 4- Programmer | 10- Mechanic | Subgroup score | 3- comedian | 9- Actor | Subgroup score | 5- Counselor | 8- Stimulator | 11- Judge | Subgroup score | | |
| * KA1 | 0 | | | | | | | | | | | | | | | | | | |
| * KA 2 | 0 | | | | | | | 17 | | | | | | | | | | | |
| KA3 | 2 | | | | | | | 30 | | 12 | | | | | | | | | |
| * KA 4 | 11 | *22 III | 12 | *47 III | *27 IV | 27 IV | *63 I | *48 I | *68 I | 60 I | *63 I | 23 III | 43 I | *37 III | 32 III | 40 II | 36 II | | |
| * KA5 | 2 | | | | | | | 12 IV | | | | | | | | | | | |
| KA6 | ab | | | | | | | | | | | | | | | | | | |
| KA7 | 2 | | | | | | 18 | | *40 III | 19 II | 48 II | | 22 IV | 12 | | | | | |
| KA8 | 3 | | | | | | * | | 12 | | | | | | | | | | |
| KA9 | 3 | | | | | | | | | | | | | | | | | | |
| KA10 | ab | | | | | | | III | 22 | | | | | | | | | | |
| KA11 | 5 | | | | | | | | | | | | | | | | | | |
| * KA12 | 3 | | | | | | | | | | | | | | | | | | |
| KA13 | 2 | | | * | | | | | | | | | | | | * | | | |
| KA14 | 8 | 30 | 23 | 23 | 30 IV | 27 | 18 III | | | | | 20 | | 27 II | 28 | 25 | 27 III | | |
| KA15 | 8 | *43 I | *48 III | *25 II | *50 II | 42 III | | | | | *12 | *57 I | 34 II | *23 IV | *35 II | 25 IV | 8 II | | |
| KA16 | 3 | | | | | | | | | | | | | | | | | | |
| KA17 | 0 | | | | | | | | | | | | | | | | | | |
| * KA18 | 9 | 53 II | *57 II | 40 I | 48 I | 50 II | 35 II | 18 | | 18 III | | *38 II | | 43 I | *43 I | *50 I | 45 I | | |
| * KA19 | 0 | | | | | | | | | | | | | | | | | | |
| KA20 | 7 | *33 I | *47 I | 25 II | *17 III | 31 I | 12 | 17 II | IV | 10 IV | *23 III | *38 IV | 31 III | *12 | *18 IV | *20 III | 17 IV | | |
| * KA21 | 0 | | | | | | | | | | | | | | | | | | |
| * KA22 | 5 | | | | | | * IV | 10 | *18 II | 9 | 18 IV | | | | | | | | |

Table A 5.11.6 Talent scores, subgroup scores and rankings of students for pilot test - stage 1 - form B

| Student Number | Physical | | | | | Music | | | | | Visual | | | | | Interpersonal | | | | |
|----------------|------------------|-------------|-----------------|----------|----------------|-------------|-----------|------------|----------------|-----------|-----------------|----------------|-----------|-------------|----------------|---------------|----------------|-----|--|--|
| | Self-Nominations | 1- Hercules | 8- Tireless One | 12- Hero | Subgroup score | 2- Musician | 5- Singer | 10- Dancer | Subgroup score | 4- Artist | 9- Craftsperson | Subgroup score | 3- leader | 6- Sociable | 7 - Spokperson | 11- Speaker | Subgroup score | | | |
| * KA1 | 5 | 20 | IV | 38 | I | *33 | II | 30 | II | | | | 12 | 17 | IV | 4 | 0 | 8 | | |
| * KA 2 | 3 | *42 | II | 17 | III | 8 | | 22 | III | | | *37 | III | 2 | | 20 | III | | | |
| KA3 | 7 | 0 | | 12 | | 17 | | 10 | | 20 | IV | 0 | 0 | 7 | | 13 | 7 | | | |
| * KA 4 | 7 | 2 | | 10 | | 17 | | 10 | | *62 | I | *20 | 3 | 28 | IV | 1 | 13 | IV | | |
| * KA5 | 3 | | | ** | | | | | | | | | | | | | | | | |
| KA6 | ab | | | | | | | | | | | | | | | | | | | |
| KA7 | 4 | *25 | III | 2 | | 6 | | 11 | | | | | | | | | | | | |
| KA8 | 8 | | | | | | | | | | | | | | | | | | | |
| *KA9 | 3 | *100 | I | 0 | | 0 | | 33 | I | | | | | | | | | | | |
| KA10 | ab | | | | | | | | | | | | | | | | | | | |
| KA11 | 8 | | | | | 8 | 33 | 13 | IV | 18 | | | * | | | | | | | |
| * KA12 | 6 | | | | | | | | | | | | | | | | | | | |
| KA13 | 5 | | | | | | | | | | | | | * | | | | | | |
| KA14 | 9 | | | | | 4 | *23 | IV | *22 | 16 | | 17 | IV | 10 | 14 | 10 | *18 | III | | |
| KA15 | 9 | 0 | | 15 | | 4 | | 6 | | 4 | *33 | II | *67 | I | 35 | III | *48 | II | | |
| KA16 | 2 | 0 | | *13 | IV | *32 | III | 15 | | | | | | | | | | | | |
| KA17 | 1 | | | | | | | | | | | | | | | | | | | |
| * KA18 | 11 | | | | | 22 | III | 37 | I | *62 | II | 40 | I | 8 | *23 | III | 16 | IV | | |
| * KA19 | 0 | | | | | | | | | | | | | | | | | | | |
| KA20 | 11 | 0 | | *23 | II | 38 | I | 20 | IV | *52 | II | 32 | III | 32 | III | 39 | II | *57 | | |
| * KA21 | 0 | | | | | | | | | | | | | | | | | | | |
| * KA22 | 6 | 0 | | 3 | | 18 | IV | 7 | | * | | | | | | 17 | 8 | 12 | | |

Table A6.7.9 Teacher nominations, item scores, sub-group scores and ranks gained by the students for Form A - School K Grade 4A- Stage 2

| Student Number | Gender | Self-Nominations | Academic | | | | | | | | | | Mech-Tech | | | | | Drama | | | | | Socio-Affect | | | | | | | | | | | |
|----------------|--------|------------------|---------------|------|--------------|------|--------------|------|-----------------|------|----------------|------|-------------|------|---------------|------|--------------|-------|----------------|------|-------------|------|--------------|------|----------------|------|--------------|------|---------------|------|-----------|------|----------------|------|
| | | | 1- Enclopedia | Rank | 6- Lightning | Rank | 7- Scientist | Rank | 12- Bright Idea | Rank | Subgroup score | Rank | 2- Handyman | Rank | 4- Programmer | Rank | 10- Mechanic | Rank | Subgroup score | Rank | 3- comedian | Rank | 9- Actor | Rank | Subgroup score | Rank | 5- Counselor | Rank | 8- Stimulator | Rank | 11- Judge | Rank | Subgroup score | Rank |
| KA1 | B | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA 2 | B | 0 | | | | | | | | | 8 | 18 | | 1 | 9 | | | | | | | | | | | | | | | | | | | |
| KA3 | B | 2 | | | | | | | | | 0 | 18 | | 15 | 11 | | | | 10 | | 3 | | | | | | | | | | | | | |
| KA 4 | B | 11 | 25 | III | 10 | | *30 | III | *20 | IV | 21 | IV | *54 | I | *58 | I | *72 | I | 61 | I | *57 | I | 32 | III | 45 | I | 27 | III | *28 | III | 37 | II | 31 | II |
| KA5 | B | 2 | | | | | | | | | 3 | 20 | IV | 10 | 11 | | | | 12 | | 0 | | | | | | | | | | | | | |
| KA6 | B | ab | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA7 | B | 2 | | | | | | | | | 10 | 0 | | 17 | III | 9 | | | 33 | II | 0 | | 17 | | | | | | | | | | | |
| KA8 | B | 3 | | | | | | | | | *8 | 0 | | 0 | | | | | | | | | | | | | | | | | | | | |
| KA9 | B | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA10 | B | ab | | | | | | | | | 7 | 23 | III | 15 | 15 | | | | | | | | | | | | | | | | | | | |
| KA11 | G | 5 | 4 | | 4 | | 4 | | 13 | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA12 | G | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA13 | G | 2 | | | | | | | | | | | | | | | | | * | | | | | | | | | | | | | * | | |
| KA14 | G | 8 | 17 | | 13 | | 23 | | 20 | | 18 | III | 1 | | 1 | 7 | | | 1 | | 18 | | 10 | | 38 | II | 23 | | 20 | | 27 | III | | |
| KA15 | G | 8 | *58 | I | *43 | III | *33 | II | *42 | II | 44 | III | 12 | 7 | 0 | | | | 25 | | *53 | I | 39 | II | *23 | IV | *37 | II | 32 | IV | 31 | II | | |
| KA16 | G | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA17 | G | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA18 | G | 9 | *37 | II | *47 | II | *42 | I | *57 | I | 46 | II | 48 | II | 7 | 3 | 19 | II | 0 | | *37 | II | 19 | | *45 | I | *38 | I | *43 | I | 42 | I | | |
| KA19 | G | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA20 | G | 7 | *58 | I | *70 | I | 33 | II | 32 | III | 48 | I | 7 | | 33 | II | 13 | IV | 18 | III | 32 | III | *30 | IV | 31 | III | *20 | | 27 | IV | *33 | III | 27 | III |
| KA21 | G | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA22 | G | 5 | | | | | 12 | | | | | *15 | IV | 8 | | *25 | II | 16 | IV | *28 | IV | 12 | | 20 | IV | | | | | 12 | | | | |

Table A6.7.21 Teacher nominations, item scores, sub-group scores and ranks gained by the students for Form B - School K, Grade 4A-Stage 2

| Student Number | Gender | Self-Nominations | Physical | | | | | | Music | | | | | | Visual | | | | Interpersonal | | | | | | | | | | | | | | |
|----------------|--------|------------------|------------------|----------------------|---------------|------|----------------|------|------------------|----------------|-----------------|------|----------------|------|----------------|----------------------|------|----------------|---------------|----------------|------------------|---------------------|------------------|------|----------------|------|----|-----|-----|-----|----|----|-----|
| | | | 1- Hercules Rank | 8- Tireless One Rank | 12- Hare Rank | Rank | Subgroup score | Rank | 2- Musician Rank | 5- Singer Rank | 10- Dancer Rank | Rank | Subgroup score | Rank | 4- Artist Rank | 9- Craftsperson Rank | Rank | Subgroup score | Rank | 3- leader Rank | 6- Sociable Rank | 7 - Spokperson Rank | 11- Speaker Rank | Rank | Subgroup score | Rank | | | | | | | |
| KA1 | B | 5 | 20 | IV | 38 | I | *33 | II | 30 | II | | | | | | | | 12 | 17 | IV | 4 | | 0 | | 8 | | | | | | | | |
| KA 2 | B | 3 | *42 | II | 17 | III | 8 | 22 | III | | | | | | | *37 | III | 2 | 20 | III | | | | | | | | | | | | | |
| KA3 | B | 7 | 0 | | 12 | | 17 | 10 | | 20 | IV | 0 | 0 | 7 | | 13 | | 7 | | | | | | | | | | | | | | | |
| KA 4 | B | 7 | 2 | | 10 | | 17 | 10 | | *62 | I | *20 | 3 | 28 | IV | 1 | | 13 | IV | | *35 | III | 17 | IV | *27 | IV | 20 | III | 25 | IV | | | |
| KA5 | B | 3 | | | ** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA6 | B | ab | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA7 | B | 4 | *25 | III | 2 | | 6 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA8 | B | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA9 | B | 3 | *100 | I | 0 | | 0 | 33 | I | | | | | | | | | | | | | | | | | | | | | | | | |
| KA10 | B | ab | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA11 | G | 8 | | | | | | | | 8 | | 33 | 13 | IV | 18 | | | * | | | | | | | | | | | | | | | |
| KA12 | G | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA13 | G | 5 | | | | | | | | | | | | | | | | | | | * | | | | | | | | | | | | |
| KA14 | G | 9 | | | | | | | | 4 | | *23 | IV | *22 | 16 | | 17 | IV | 10 | 14 | | 10 | | *18 | III | 6 | 12 | 12 | | | | | |
| KA15 | G | 9 | 0 | | 15 | | 4 | 6 | | 4 | | *33 | II | *67 | I | 35 | III | *48 | II | *45 | I | 47 | I | *32 | IV | 23 | I | *33 | III | *30 | II | 30 | III |
| KA16 | G | 2 | 0 | | *13 | IV | *32 | III | 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA17 | G | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA18 | G | 11 | | | | | | | | 22 | III | 37 | I | *62 | II | 40 | I | 8 | *23 | III | 16 | IV | 43 | I | *22 | II | 50 | I | 13 | IV | 32 | II | |
| KA19 | G | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA20 | G | 11 | 0 | | *23 | II | 38 | I | 20 | IV | *52 | II | 32 | III | 32 | III | 39 | II | *57 | I | 35 | II | 46 | II | *40 | II | 13 | *43 | II | *63 | I | 40 | I |
| KA21 | G | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA22 | G | 6 | 0 | | 3 | | 18 | IV | 7 | | * | | | | | | | | | | 17 | | 8 | | 12 | | 12 | 12 | | | | | |

Table 5.11.7 Comparison of final results of PTSN Form A at pilot test stage 1 and stage 2

| SIN | Academic | | Mech-Tech | | Drama | | Socio-Affect | |
|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Pilot stage 1 | Pilot stage 2 |
| * KA1 | | | | | | | | |
| * KA 2 | | | | | | | | |
| KA3 | | | | | | | | |
| * KA 4 | IV | IV | I | I | I | I | II | II |
| * KA5 | | | | | | | | |
| KA6 | | | | | | | | |
| KA7 | | | II | | IV | | | |
| KA8 | | | | | | | | |
| KA9 | | | | | | | | |
| KA10 | | | | | | | | |
| KA11 | | | | | | | | |
| * KA12 | | | | | | | | |
| KA13 | | | | | | | | |
| KA14 | | | | | | | III | III |
| KA15 | III | III | | | II | II | II | II |
| KA16 | | | | | | | | |
| KA17 | | | | | | | | |
| * KA18 | II | II | III | II | | | I | I |
| * KA19 | | | | | | | | |
| KA20 | I | I | IV | III | III | III | IV | III |
| * KA21 | | | | | | | | |
| * KA22 | | | | IV | | IV | | |

The data in the Table A5.11.7 (relevant to Form A) shows that except in two places (in sub-group Mechanical-Technical and Drama) the same students were nominated for all the other places at two different stages. Even though there is a difference in one place in Socio-Affective domain, the four students in first four places are the same in two stages, only the ranks are different. These results show a high reliability of the instrument

Similarly the data in the Table A5.11.8 (relevant to Form B) shows that except in one place (in sub-group Music) in all the other sub-groups, same students were nominated for all the other places at two different stages. Even though there are slight differences in few places in Visual and Interpersonal domains, the students nominated in to the first four places are the same in two stages (There are differences only in the ranks). These results also show a high reliability of the instrument

Table 5.11.8 Comparison of final results of PTSN Form B at pilot stage 1 and stage 2

| SIN | Physical | | Music | | Visual | | Interpersonal | |
|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Pilot stage 1 | Pilot stage 2 |
| * KA1 | III | II | | | | | | |
| * KA 2 | II | III | | | IV | III | | |
| KA3 | | | | | | | | |
| * KA 4 | | | IV | IV | | | II | IV |
| * KA5 | | | | | | | | |
| KA6 | | | | | | | | |
| KA7 | | | | | | | | |
| KA8 | | | | | | | | |
| KA9 | I | I | | | | | | |
| KA10 | | | | | | | | |
| KA11 | | | III | | | | | |
| * KA12 | | | | | | | | |
| KA13 | | | | | | | | |
| KA14 | | | | | | | | |
| KA15 | | | | III | I | I | IV | III |
| KA16 | | | | | | | | |
| KA17 | | | | | | | | |
| * KA18 | | | I | I | III | IV | I | II |
| * KA19 | | | | | | | | |
| KA20 | IV | IV | II | II | II | II | III | I |
| * KA21 | | | | | | | | |
| * KA22 | | | | | | | | |

The PTSN Forms A and B were used for teacher nominations too. Therefore, the reliability of the instrument in teacher nomination will be examined next. In the Tables A5.11. 5, A5.11.6, A6.7.9 and A6.7.21, the teacher nominations for each item are marked by an asterisk (*). Summary of data analysis regarding teacher nominations for Forms A and B are illustrated in the following two tables, Table A5.11.9 and Table A5.11.10.

Table A5.11.9 Illustration of teacher nominations for PTSN Form A in stage 1 and stage 2 of pilot test.

| | Academic | | | | | | Mech-Tech | | | | Drama | | | | Socio-Affect | | | | | | | | | |
|------|-----------------|-----------------|--------------|--------------|--------------|--------------|-----------------|-----------------|-------------|-------------|---------------|---------------|--------------|--------------|--------------|-------------|----------|----------|--------------|--------------|---------------|---------------|-----------|-----------|
| | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | | | | | | |
| SIN | 1- Encyclopedia | 1- Encyclopedia | 6- Lightning | 6- Lightning | 7- Scientist | 7- Scientist | 12- Bright Idea | 12- Bright Idea | 2- Handyman | 2- Handyman | 4- Programmer | 4- Programmer | 10- Mechanic | 10- Mechanic | 3- comedian | 3- comedian | 9- Actor | 9- Actor | 5- Counselor | 5- Counselor | 8- Stimulator | 8- Stimulator | 11- Judge | 11- Judge |
| KA1 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA2 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA3 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA4 | * | | | | * | * | * | * | * | * | * | * | * | * | * | * | | | * | | | * | | |
| KA5 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA6 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA7 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA8 | | | | | | | | * | * | | | | * | | | | | | | | | | | |
| KA9 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA10 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA11 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA12 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA13 | | | | | * | | | | | | | | | | | * | | | | | | | * | * |
| KA14 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA15 | * | * | * | * | * | * | * | * | | | | | | | * | | * | * | * | * | * | * | * | * |
| KA16 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA17 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA18 | | * | * | * | | * | | * | | | | | | | | | * | * | | * | * | * | * | * |
| KA19 | | | | | | | | | | | | | | | | | | | | | | | | |
| KA20 | * | * | * | * | | | * | | | | | | | | * | | * | * | * | * | * | * | * | * |
| KA21 | | | | | | | | * | * | | | | * | * | | * | | | | | | | * | * |

Table A5.11.10 Illustration of teacher nominations for PTSN Form B in stage 1 and Stage 2 of pilot test

| | Physical | | | | | | Music | | | | | | Visual | | | | Interpersonal | | | | | | | | | |
|------|-------------|-------------|----------------|----------------|----------|----------|-------------|-------------|-----------|-----------|------------|------------|-----------|-----------|--------------|--------------|---------------|-----------|-------------|-------------|----------------|----------------|-------------|-------------|---|---|
| | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | | | | | | |
| SIN | 1- Hercules | 1- Hercules | 8-Tireless One | 8-Tireless One | 12- Hare | 12- Hare | 2- Musician | 2- Musician | 5- Singer | 5- Singer | 10- Dancer | 10- Dancer | 4- Artist | 4- Artist | Craftsperson | Craftsperson | 3- leader | 3- leader | 6- Sociable | 6- Sociable | 7 - Spokperson | 7 - Spokperson | 11- Speaker | 11- Speaker | | |
| KA1 | | | | | * | * | | | | | | | | | | | | | | | | | | | | |
| KA 2 | * | * | | | | | | | | | | | * | * | | | | | | | | | | | | |
| KA3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA 4 | | | | | | | * | * | * | * | | | | | | | * | * | | | | * | * | * | | |
| KA5 | | | * | * | | | | | | | | | | | | | | | | | | | | | | |
| KA6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA7 | * | * | | | | | | | | | | | | | | | | | | | | | | | | |
| KA8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA9 | * | * | | | | | | | | | | | | | | | | | | | | | | | | |
| KA10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA11 | | | | | | | | | | | | | | | * | * | | | | | | | | | | |
| KA12 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA13 | | | | | | | | | | | | | | | | | | | | * | * | | | | | |
| KA14 | | | | | | | | * | * | | * | * | | | | | | | | * | * | | | | | |
| KA15 | | | | | | | | * | * | * | * | * | * | * | * | * | * | * | * | | | * | * | * | * | * |
| KA16 | | | * | * | * | * | | | | | | | | | | | | | | | | | | | | |
| KA17 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA18 | | | * | | | | | | | * | * | | | | * | * | * | * | * | * | * | * | | | | |
| KA19 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA20 | | | | * | * | | * | * | | * | | | * | * | | | * | * | | | * | * | * | * | * | * |
| KA21 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KA22 | | | | | | | * | * | | | | | | | | | | | | | | | | | | |

When observing the Tables A5.11.9 and A5.11.10, only 7 and 8 instances the teacher nominations of the two stages of pilot test results are different. When compared to the total number of nominations given by the teacher (that is 36 nominations for each Form A and B) this can be overlooked. This shows by using translated PTSN forms reliable data can be collected from peers and as well as teachers.

Methodology of data collection for Objective 3 of the pilot study

Examination of reliability of PIP forms.

Instruments for data collection

Sample

The sample was the parents of students of school K.

The instrument for data collection was PIP forms

Data collection procedure for objective 2 of the pilot study.

Parents were asked to respond to the PIP forms twice with a two months gap in between two administrations.

Presentation of data, data analysis and discussion

Mean value of the ratings of each area for each student was calculated at stage 1 and stage 2 of data collection. The mean value of the areas for each student is indicated in Table A5.11.11 (The method of calculations is discussed in Section 5.2.6.4 under Methodology Chapter.

When compared the mean values of different areas measured by the PIP forms in the two different instances, the values did not show any significant differences. (See the Table A5.11.11, pg 71) Also, the Pearson Correlation was calculated between the mean values of the five areas of gifted domains examined by the PIP forms for pilot test stage 1 and stage 2. The results suggested that for all the five areas the correlation is significant at the 0.01 level. This shows there is a good relationship between the data collected in two different stages. This indicated the reliability of the PIP forms.

Conclusion of the study

1. The Sinhalese translation of PTSN Forms A and B showed a high reliability in gathering data on giftedness from both the teachers and peers.
2. LPAD items and researcher made intervention items could be used for successful intervention in metacognitive development of the students.
3. Similarly, PIP forms showed a high reliability in collecting data from parents on giftedness on various cognitive areas of their children.

Table A5.11.12 Illustration of mean values of different intellectual areas measured by PIP forms during the two different stages of the pilot test

| SIN | Area S1 | | Area S2 | | Area S3 | | Area S4 | | Area S5 | |
|-----|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|
| | Stg1 | Stg 2 |
| | S1A1 | S1A2 | S2A1 | S2A2 | S3A1 | S3A2 | S4A1 | S4A2 | S5A1 | S5A2 |
| 1 | 2.82 | 3.32 | 2.76 | 3.176 | 3 | 3.32 | 3.27 | 3.54 | 2.72 | 3.06 |
| 2 | 3.41 | 3.32 | 3.06 | 3.235 | 3.04 | 3.2 | 3.31 | 3.15 | 3 | 3.22 |
| 3 | 2.41 | 2.64 | 2.47 | 2.765 | 2.52 | 2.72 | 2.42 | 2.65 | 2.28 | 2.83 |
| 4 | 3.86 | 3.86 | 3.65 | 3.529 | 3.52 | 3.52 | 3.5 | 3.58 | 3.28 | 3.28 |
| 5 | 2.41 | 2.5 | 2.53 | 2.471 | 2.36 | 2.4 | 2.31 | 2.31 | 2.56 | 2.44 |
| 7 | ab | 2.91 | ab | 3 | ab | 3.16 | ab | 2.92 | ab | 2.89 |
| 8 | 3.5 | 3.55 | 3.29 | 3.471 | 3.76 | 3.72 | 3.38 | 3.19 | 3.44 | 3.44 |
| 9 | 2.59 | 2.41 | 2.65 | 2.353 | 2.6 | 2.36 | 2.62 | 2.5 | 2.56 | 2.17 |
| 11 | 3.27 | 3.68 | 3.71 | 3.706 | 3.48 | 2.96 | 3.38 | 3.15 | 3.61 | 3.06 |
| 12 | 3.68 | 3.68 | 3.71 | 3.706 | 3.6 | 3.6 | 3.5 | 3.5 | 3.67 | 3.67 |
| 13 | 3.27 | 3.41 | 3.24 | 3.412 | 3.36 | 3.4 | 3.15 | 3.15 | 3.06 | 3.17 |
| 14 | 3.73 | 3.64 | 3.59 | 3.471 | 3.76 | 3.76 | 3.73 | 3.77 | 3.61 | 3.44 |
| 15 | 3.77 | 3.77 | 3.65 | 3.647 | 3.76 | 3.76 | 3.65 | 3.65 | 3.61 | 3.61 |
| 16 | 2.95 | 2.95 | 2.88 | 2.706 | 2.84 | 2.84 | 2.92 | 2.69 | 2.83 | 2.56 |
| 17 | 3.09 | 3 | 2.94 | 2.824 | 3.2 | 3.2 | 3.04 | 2.85 | 3.39 | 3.44 |
| 18 | 3.36 | 3 | 2.88 | 3.235 | 3.4 | 3.4 | 3.19 | 3.23 | 3.17 | 3.11 |
| 19 | 2.14 | 2.27 | 2.18 | 1.882 | 2.08 | 1.84 | 1.96 | 1.96 | 1.89 | 1.72 |
| 20 | 3.41 | 3.36 | 3.12 | 3.118 | 3.4 | 3.12 | 3.31 | 3.27 | 3.22 | 3.17 |
| 21 | 2.23 | 2.77 | 2.29 | 2.647 | 2.56 | 2.8 | 2.54 | 2.96 | 2.67 | 2.94 |
| 22 | 2.41 | 2.45 | 2.71 | 2.824 | 2.84 | 2.72 | 2.54 | 2.54 | 2.94 | 2.94 |

| | | | |
|----------|--------------|-----|-----------------------|
| Area S1- | Intellectual | S1A | |
| Area S2- | Academic | S2A | mean value or average |
| Area S3- | Creative | S3A | rating of each area |
| Area S4- | Social | S4A | |
| Area S5- | Artistic | S5A | |

Appendix 5.12 The interview guide for case study development

Case studies would be developed from the data gathered by IQ test, Dynamic assessment, Achievement tests, PTSNF, Parents nominations and interview data.

Researcher revised the interview schedule which she submit with the research proposal. During the case study development it was expected to do triangulation of data. Also planned to gather data to find out data to support the Gagne's talent development process. That is whether the interpersonal, environmental or chance factors have an positive influence on talent development (academic talent) This would be done by comparing revealed such factors identified in gifted higher achievers, gifted under achievers and invisible gifted underachievers. Such factors would be identified by interviewing students, parents and teachers.

Therefore interview schedule is in two parts, Part 1 & part 11

Part 1 – is s to find out interview data that supported the data collected by quantitative methods.

Part 11- is to collect data to support the Gagne's talent development process.

Interview schedule

Information expected to be gathered during the Semi-structured interviews (data expected to collect during the interviews)

Interview Schedule - For Parents

Part 1

- About child's favorite school subject/subjects
- Child's wiliness to go to school
- Child's attitudes towards school
- Child's Vocabulary
- Interests of the child
- memory and imagination power of the child
- Processing speed(learn new things rapid and easily)
- Early read & speak ability/uses extensive vocabulary
- Self initiativeness
- Strong drive to be the best
- Strong concerned on completion of given task
- About child's academic skills including mathematics
- Child's talents other than academic talents (e.g. creativity – art/music/signings/dancing/hand work
- Curiosity
- Sensitiveness to problems (ready to question or change situations)
- Alertness to beauty and arts and nature
- Enjoys lighter moments/cheerful/Happy
- Child's adaptability to situations
- Have uneven skills/abilities
- Risk taker
- Use original methods
- Independent thinker
- Sensitiveness to others(feel how others feel or think, easily hurt by others)

- Self-discipline
- Child's ability to socialize/Social skills of the child
- Emotional status of the child at home / school Parental expectations
- Relationships within the family members (child, siblings, parents)
- Parents perception on education
- Leadership qualities of the child at home /school/ school-group work

Part 11

- **Environmental factors**

Parent's/Siblings status

Father's, Mother's/siblings level of education

Main income

Monthly income

mother's/father's occupation

Physical condition

special place for studies, other facilities

supply books/magazines/news papers, social

whether associate children who have + attitudes on studies)

Support for education

Parents/grand parents/elders/peers support to the child's education

help from neighbors/peers around the child

Are there any educated persons in the family circle whom the child

like/admires

About pre schooling

Private tuition

Special skills in the child/Nature of parents' support on skill development

Parent's relationship with school staff

Other

- **Chance factors**

Ancestral background (Are there many more educated people/clever people/brilliant people)/heredity

Special skills of parentschild's

- **Intrapersonal factors**

Rate of the development of the child (early/ late)

Physical status of the child (characteristics, handicap/ normal, health condition)

Child's behaviours before entering school/present (creativity, inquisitiveness,

Interests on reading, and other interests, Child's attention

and concentration on work

Child's motivation to work/self motivated/keen/interested

Child's will power

Child's personality, including self esteem, self awareness, adaptability

/work habits (enjoy, boring etc)

Interview Schedule - For Teachers

Part 1

- About child's best school subject/subjects
- Child's wiliness to go to school
- Child's attitudes towards school
- Child's Vocabulary/ability to read

- Interests of the child
- memory and imagination power of the child
- Processing speed(learn new things rapid and easily)
- Self initiativeness
- Strong drive to be the best
- Strong concerned on completion of given task
- About child's academic skills including mathematics
- Child's talents other than academic talents (e.g. creativity – art/music/signings/dancing/hand work
- Curiousness
- Sensitiveness to problems (ready to question or change situations)
- Alertness to beauty and arts and nature
- Enjoys lighter moments/cheerful/Happy
- Child's adaptability to situations
- Have uneven skills/abilities
- Risk taker
- Use original methods
- Independent thinker
- Sensitiveness to others(feel how others feel or think, easily hurt by others)
- Self-discipline
- Child's ability to socialize/Social skills of the child
- Emotional status of the child at home / school Parental expectations
- Relationships within the family members (child, siblings, parents)
- Parents perception on education
- Leadership qualities of the child at home /school/ school-group work
-
- Vocabulary and Singhalese language skills
- Participation and answering during the class
- About completing the home work
- Completing of day to day class work
- Perfectness of the work
- Any extra ordinary characteristics, talents or behaviours of the child
- Does the child ask many questions?
- Any thing else that teacher like to add

Part 11

- **Environmental factors**
 - Teacher
 - Nature of the teacher (observing by the researcher)
 - Teacher's highest qualifications
 - Physical condition
 - Class room arrangements, other facilities
 - Supply books/magazines/news papers, social
 - Whether associate children who have + attitudes on studies)
 - Support for education
 - Parents/grand parents/elders/peers support to the child's education
 - Extra help from the teacher
 - Special skills in the child/ parents
 - Parents' support
 - Other
 - Parent's relationship with school staff

- **Intrapersonal factors**

- Physical status of the child (characteristics, handicap/ normal, health condition)
- Interests on reading, and other interests, Child's attention and concentration on work
- Child's motivation to work/self motivated/keen/interested
- Child's will power
- Child's personality, including self esteem, self awareness, adaptability /work habits (enjoy, boring etc)

Interview Schedule - For Students

Part 1

- **Environmental factors**

- Physical condition
 - Special place for studies, other facilities
 - Supply books/magazines/news papers, social
 - Whether associate children who have + attitudes on studies)
- Support for education
 - Teacher encourages continuing reading habits?
 - Parents/grand parents/elders/peers support to the child's education
 - Help from neighbors/peers around the child
 - Are there any educated persons in the family circle whom the child like/admires
 - Private tuition
 - Special skills in the child/Nature of parents' support on skill development
 - Other
 - Parent's relationship with the child

- **Intrapersonal factors**

- Creativity/ inquisitiveness
- Interests on reading, and other interests, Child's attention and concentration on work
- Child's motivation to work/self motivated/keen/interested
- Child's will power
- Child's personality, including self esteem, self awareness, adaptability /work habits (enjoy, boring etc)

PART 11

- enjoy or like on Academic subject
- Class work easy/ pick up the subject matter easily/ difficult/boring
- Like to get work appropriate to the level
- School work is interesting/ enjoying /challenging or not /feel need more work
- Have lot of friends?
- Interests out side the school
- Abilities in music, drawing, dancing
- Reading habits
- Always try to do the best or minimum when engage in a certain task
- Idea about year five scholarship examination
- Ideas about the school environment
- Get opportunities to show their talents
- If not, like to have such opportunities
- Get freedom to express own ideas regarding the school work
- If not would he/she like to have such opportunity

- Have friends
- About best friend/friends & why does like them
- likes to do team work during academic work/ like to be the team leader
- If yes with whom does like to work & reasons
- Like to team work in any other situations other than academic work & why?
- Hobbies? collection of books? What sort of books like to read write poetry, or stories,
- like to work on computers
- Whom do you very much like in your family circle (may be a relative) and why
- Attitudes towards the school- Positive/negative
- Had preschool education
- Inquisitive about more details on subject matter
- Have computer skills
- Inquisitive about plants, planets and
- animals in the environment
- Like to take part in dramas
- Able to do repairs/manipulate in radios, television, video deck etc
- Like to engage actively in project work
- Like to crack jokes

Appendix 6.1 Achievement test marks of 12 classes of schools J, K, L, & M

| Table A6.1.1 Achievement test marks of students of school J C Grade4A | | | | Table A6.1.2 Achievement test marks of students of school J Grade 4B | | | |
|--|-----------|-------|-----------|---|-----------|-------|----------|
| SIN | Math. Mks | SIN | Sin. Mks. | SIN | Math. Mks | SIN | Sin.Mks. |
| JA 26 | ab | JA 9 | ab | JB41 | 93 | JB26 | 94 |
| A 35 | ab | JA 28 | ab | JB26 | 90 | JB29 | 89 |
| JA 43 | 99 | JA48 | ab | JB36 | 86 | JB36 | 86 |
| JA 9 | 93 | JA 43 | 98 | JB9 | 77 | JB40 | 86 |
| JA 44 | 88 | JA 11 | 91 | JB45 | 76 | JB41 | 83 |
| JA 25 | 86 | JA 44 | 90 | JB29 | 75 | JB14 | 79 |
| JA 30 | 85 | JA 38 | 87 | JB39 | 73 | JB35 | 79 |
| JA 1 | 79 | JA 39 | 86 | JB43 | 72 | JB45 | 79 |
| JA 12 | 79 | JA 36 | 85 | JB14 | 70 | JB28 | 77 |
| JA 16 | 79 | JA 37 | 84 | JB15 | 70 | JB34 | 76 |
| JA 17 | 78 | JA 16 | 83 | JB32 | 66 | JB37 | 76 |
| JA49 | 76 | JA 25 | 83 | JB35 | 66 | JB2 | 73 |
| JA 2 | 74 | JA49 | 83 | JB42 | 66 | JB32 | 73 |
| JA 22 | 74 | JA 30 | 82 | JB3 | 65 | JB15 | 72 |
| JA 33 | 74 | JA 17 | 81 | JB21 | 65 | JB30 | 72 |
| JA 11 | 72 | JA 29 | 80 | JB40 | 65 | JB39 | 72 |
| JA 42 | 72 | JA 2 | 79 | JB24 | 64 | JB9 | 69 |
| JA 46 | 72 | JA 32 | 79 | JB5 | 63 | JB3 | 68 |
| JA 8 | 71 | JA 8 | 75 | JB44 | 63 | JB42 | 68 |
| JA 10 | 69 | JA 40 | 75 | JB25 | 61 | JB25 | 67 |
| JA 20 | 69 | JA 1 | 73 | JB37 | 58 | JB5 | 66 |
| JA 23 | 69 | JA 12 | 73 | JB30 | 57 | JB17 | 66 |
| JA 15 | 68 | JA 33 | 72 | JB46 | 57 | JB44 | 65 |
| JA 7 | 67 | JA 42 | 72 | JB17 | 56 | JB21 | 64 |
| JA 36 | 66 | JA 45 | 72 | JB27 | 56 | JB12 | 62 |
| JA 41 | 65 | JA 46 | 70 | JB1 | 55 | JB31 | 62 |
| JA 31 | 60 | JA 10 | 68 | JB20 | 54 | JB1 | 60 |
| JA 3 | 59 | JA 15 | 67 | JB12 | 51 | JB23 | 58 |
| JA 14 | 59 | JA 20 | 67 | JB16 | 51 | JB16 | 53 |
| JA 19 | 57 | JA 22 | 67 | JB33 | 51 | JB24 | 53 |
| JA 29 | 57 | JA 23 | 64 | JB2 | 50 | JB6 | 52 |
| JA 40 | 57 | JA 34 | 63 | JB23 | 49 | JB46 | 52 |
| JA 6 | 55 | JA 31 | 62 | JB28 | 48 | JB27 | 51 |
| JA 38 | 53 | JA 7 | 61 | JB6 | 43 | JB33 | 51 |
| JA 32 | 50 | JA 41 | 61 | JB4 | 39 | JB7 | 48 |
| JA 39 | 49 | JA 13 | 58 | JB10 | 39 | JB11 | 48 |
| JA 34 | 45 | JA 14 | 58 | JB8 | 37 | JB4 | 43 |
| JA 45 | 44 | JA 6 | 57 | JB7 | 36 | JB20 | 40 |
| JA 5 | 40 | JA 27 | 52 | JB11 | 32 | JB10 | 36 |
| JA 27 | 40 | JA 24 | 50 | JB34 | 32 | JB13 | 30 |
| JA 13 | 35 | JA 3 | 49 | JB22 | 26 | JB22 | 27 |
| JA 18 | 34 | JA 18 | 48 | JB13 | 24 | JB38 | 27 |
| JA 4 | 33 | JA 35 | 47 | JB18 | 21 | JB8 | 25 |
| JA 37 | 29 | JA 5 | 46 | JB38 | 14 | JB18 | 25 |
| JA 24 | 26 | JA 19 | 44 | 1JB19 | 12 | JB43 | 7 |
| JA 21 | 25 | JA 4 | 36 | JB31 | 4 | 1JB19 | 1 |
| JA48 | 12 | JA 21 | 18 | SIN - Student Identification Number | | | |
| Ja47 | 11 | JA 26 | 11 | Math. Mks - Mahtematics Marks | | | |
| JA 28 | 9 | Ja47 | 8 | Sin.Mks. - Sinhalese Language Marks | | | |

**Appendix 6.2. Tables representing RSPM pre-test marks of students of all the schools
& Table of percentile bands**

Table A6.2.1 School J grade A- RSPM test

Table A6.2.2 School J grade B- RSPM test

| SIN | Gender | Pre test mks |
|-------|--------|--------------|
| JA 1 | B | 26 |
| JA 2 | B | 50 |
| JA 3 | B | 41 |
| JA 4 | B | 32 |
| JA 5 | B | 41 |
| JA 6 | B | 41 |
| JA 7 | B | 28 |
| JA 8 | B | 40 |
| JA 9 | B | 56 |
| JA 10 | B | 40 |
| JA 11 | B | 46 |
| JA 12 | B | 55 |
| JA 13 | B | 41 |
| JA 14 | B | 47 |
| JA 15 | B | 37 |
| JA 16 | B | 29 |
| JA 17 | B | 28 |
| JA 18 | B | 41 |
| JA 19 | B | 37 |
| JA 20 | B | 33 |
| JA 21 | B | 24 |
| JA 22 | B | 45 |
| JA 23 | B | 27 |
| JA 24 | B | 28 |
| JA 25 | B | 48 |
| JA 26 | B | 27 |
| JA 27 | B | 34 |
| JA 28 | G | 35 |
| JA 29 | G | 36 |
| JA 30 | G | 41 |
| JA 31 | G | 42 |
| JA 32 | G | 35 |
| JA 33 | G | 29 |
| JA 34 | G | 38 |
| JA 35 | G | 32 |
| JA 36 | G | 36 |
| JA 37 | G | 31 |
| JA 38 | G | 34 |
| JA 40 | G | 32 |
| JA 41 | G | 43 |
| JA 42 | G | 27 |
| JA 43 | G | 43 |
| JA 44 | G | 38 |
| JA 45 | G | 32 |
| JA 46 | G | 47 |
| JA48 | G | 34 |
| JA49 | G | 33 |

| SIN | Gender | Pre-test mks |
|------|--------|--------------|
| JB1 | B | |
| JB2 | B | 29 |
| JB3 | B | 49 |
| JB4 | B | 33 |
| JB5 | B | 40 |
| JB6 | B | 27 |
| JB7 | B | 38 |
| JB8 | B | 38 |
| JB9 | B | 30 |
| JB10 | B | ab |
| JB11 | B | 31 |
| JB12 | B | 29 |
| JB13 | B | 15 |
| JB14 | B | 34 |
| JB15 | B | 44 |
| JB16 | B | 32 |
| JB17 | B | 21 |
| JB18 | B | 12 |
| 1JB9 | B | ab |
| JB20 | B | 23 |
| JB21 | B | 22 |
| JB22 | B | 15 |
| JB23 | B | 39 |
| JB24 | B | 38 |
| JB25 | B | 39 |
| JB26 | B | 35 |
| JB27 | G | 37 |
| JB28 | G | 39 |
| JB29 | G | 41 |
| JB30 | G | 42 |
| JB31 | G | 33 |
| JB32 | G | 47 |
| JB33 | G | 40 |
| JB34 | G | 34 |
| JB35 | G | 40 |
| JB36 | G | 46 |
| JB37 | G | 31 |
| JB38 | G | 26 |
| JB39 | G | ab |
| JB40 | G | 44 |
| JB41 | G | 45 |
| JB42 | G | 32 |
| JB43 | G | 45 |
| JB44 | G | 34 |
| JB45 | G | 37 |

| Table A6.2.13 Percentile bands for grade 4 students in Sri Lanka for RSPM IQ test (calculatoin based on IQ Pre-test marks) | | | | | |
|--|----------------|-----------------------|-----------------------|--------------------------|--------------------------|
| | Cut off | Sch. K- | Sch. L- | Sch. M- | Sch. J |
| Percentile band | Mark | village School | village School | Semi urban School | Semi urban School |
| | | 19 students | 19students | 63 students | 349 students |
| 95th percentile | 47 | 2 | 1 | 2 | 27 |
| 90th percentile | 45 | 0 | 1 | 2 | 17 |
| 85th percentile | 43 | 2 | | 5 | 20 |
| 80th percentile | 42 | 1 | 1 | 1 | 9 |
| 75th percentile | 40 | 2 | | 6 | 31 |
| 70th percentile | 39 | | | 1 | 10 |
| 65th percentile | 38 | 3 | | 3 | 14 |
| 60th percentile | 36 | 1 | 1 | 6 | 28 |
| 55th percentile | 35 | 1 | 1 | 4 | 16 |
| 50th percentile | 34 | | | 2 | 13 |
| 25th percentile & below | 27 | 7 | 14 | 31 | 164 |

Appendix 6.3 Illustration of Pre-test, post-test and far-test RSPM marks and relevant percentile bands of students in Experimental group & Control group

Table A6.3.1 Pre test, Post test and Far test marks & percentile bands of Experimental group

| SIN | Pre test Marks | Percentile bands | Post- test Marks | Percentile bands | Far test | Percentile bands |
|-------|----------------|------------------|------------------|------------------|----------|------------------|
| JA 33 | 29 | 25 | 42 | 80 | 45 | 90* |
| JA 35 | 32 | 25 | 42 | 80 | 45 | 90* |
| JA 37 | 31 | 25 | 39 | 70 | 36 | 60 |
| JA 44 | 38 | 65 | 43 | 85 | ab | ab |
| JB 4 | 33 | 25 | 47 | 95* | 36 | 60 |
| JB 5 | 40 | 75 | 39 | 70 | 36 | 60 |
| JB 6 | 27 | 25 | 39 | 70 | 38 | 65 |
| JB 7 | 38 | 65 | 45 | 90* | 36 | 60 |
| JB 8 | 38 | 65 | 47 | 95* | 47 | 95* |
| JB 9 | 30 | 25 | 45 | 90* | 33 | 25 |
| JB 17 | 21 | 10 | 47 | 95* | 41 | 80 |
| JB 21 | 22 | 10 | 39 | 70 | 38 | 65 |
| JB 22 | 15 | 5 | 27 | 25 | 35 | 55 |
| JB 38 | 26 | 25 | 47 | 95* | 36 | 60 |
| JB 45 | 37 | 60 | 44 | 85 | 46 | 90* |
| JC 30 | 24 | 10 | 30 | 25 | 39 | 70 |
| JC 33 | 31 | 25 | 38 | 65 | ab | ab |
| JC 34 | 20 | 10 | 26 | 25 | ab | ab |
| JC 39 | 28 | 25 | 32 | 25 | 36 | 60 |
| JE 33 | 16 | 10 | 29 | 25 | 31 | 25 |
| JE 37 | 20 | 10 | 42 | 80 | 39 | 70 |
| JE 41 | 19 | 10 | 40 | 75 | 39 | 70 |
| JE 43 | 29 | 25 | 44 | 85 | 43 | 85 |
| KA 1 | 32 | 25 | 44 | 85 | 49 | 95* |
| KA 2 | 38 | 65 | 49 | 95* | 53 | 95* |
| KA 4 | 36 | 60 | 49 | 95* | 43 | 85 |
| KA 5 | 38 | 65 | 51 | 95* | 50 | 95* |
| KA 12 | 26 | 25 | 45 | 90* | 38 | 65 |
| KA 18 | 40 | 75 | 56 | 95* | 46 | 90* |
| KA 19 | 15 | 5 | 28 | 25 | 35 | 55 |
| KA 21 | 21 | 10 | 25 | 10 | 28 | 25 |
| KA 22 | 35 | 55 | 48 | 95* | 56 | 95* |
| LA 3 | 29 | 25 | 39 | 70 | 39 | 70 |
| LA 5 | 22 | 10 | 32 | 25 | 28 | 25 |
| LA 7 | 24 | 10 | 44 | 85 | 34 | 50 |
| LA 8 | 32 | 25 | 56 | 95* | 42 | 80 |
| LA 9 | 46 | 90* | 40 | 75 | 41 | 80 |
| LA 14 | 35 | 55 | 42 | 80 | 41 | 80 |
| LA 18 | 42 | 80 | 51 | 95* | 47 | 95* |
| LA 20 | 24 | 10 | 48 | 95* | 46 | 90* |
| MA 3 | 33 | 25 | 29 | 25 | 29 | 25 |
| MA 4 | 21 | 10 | 25 | 10 | 27 | 25 |
| MA 5 | 34 | 50 | 28 | 25 | 21 | 10 |
| MA 10 | 29 | 25 | 35 | 55 | 39 | 70 |
| MA 15 | 40 | 75 | 42 | 80 | 46 | 90* |
| MA 27 | 28 | 25 | 17 | 10 | 22 | 10 |
| MA 29 | 42 | 80 | 46 | 90* | ab | ab |
| MA 32 | 35 | 55 | 33 | 25 | 39 | 70** |
| MA 33 | 37 | 60 | 42 | 80 | 42 | 80 |
| MB 1 | 33 | 25 | 40 | 75 | 43 | 80 |
| MB 4 | 30 | 25 | 36 | 60 | 31 | 25 |
| MB 9 | 28 | 25 | 42 | 80 | 40 | 75 |
| MB 13 | 36 | 60 | 42 | 80 | 40 | 75 |
| MB 28 | 35 | 55 | 43 | 85 | 48 | 95* |
| MB32 | 44 | 85 | 44 | 85 | 39 | 70 |
| MB34 | 35 | 55 | 51 | 95* | 50 | 95* |

| SIN | Pre test Marks | Percentile bands | Post- test Marks | Percentile bands | Far- test | Percentile bands |
|--------|----------------|------------------|------------------|------------------|-----------|------------------|
| JA 21 | 24 | 10 | 28 | 25 | 30 | 25 |
| JA 38 | 34 | 50 | 31 | 25 | 35 | 55 |
| JA 41 | 43 | 85 | 47 | 95* | 44 | 85 |
| JA 24 | 28 | 25 | 30 | 25 | 28 | 25 |
| JB 2 | 29 | 25 | 30 | 25 | ab | ab |
| JB 11 | 31 | 25 | 24 | 10 | | |
| JB 15 | 44 | 85 | 38 | 65 | 44 | 85 |
| JB 23 | 39 | 70 | 42 | 80 | 38 | 65 |
| JB 24 | 38 | 65 | 43 | 85 | 43 | 85 |
| JB 28 | 39 | 70 | 33 | 25 | 33 | 25 |
| JB 20 | 23 | 10 | 27 | 25 | 28 | 25 |
| JC 42 | 30 | 25 | 42 | 80 | 39 | 70 |
| JC 44 | 26 | 25 | 27 | 25 | ab | ab |
| JE15 | 26 | 25 | 29 | 25 | 29 | 25 |
| JE12 | 37 | 60 | 38 | 65 | 37 | 60 |
| JE 39 | 37 | 60 | 36 | 60 | 37 | 60 |
| KA 9 | 31 | 25 | 32 | 25 | 35 | 55 |
| KA6 | 4 | below5th | 14 | 5th | 10 | below5th |
| KA 7 | 20 | 5 | 10 | below5th | ab | ab |
| KA 11 | 41 | 80 | 42 | 80 | ab | ab |
| KA 8 | 42 | 80 | 40 | 75 | 43 | 85* |
| KA 14 | 38 | 65 | 37 | 60 | ab | ab |
| KA 17 | 31 | 25 | 35 | 55 | 37 | 60 |
| KA 20 | 44 | 85 | 44 | 85 | 45 | 90* |
| LA 2 | 22 | 10 | 9 | below5th | 14 | 5 |
| LA 4 | 29 | 25 | 18 | 10 | 28 | 25 |
| LA 6 | 36 | 60 | 31 | 25 | ab | ab |
| LA 11 | 0 | o | 8 | below5th | ab | ab |
| LA 12 | 25 | 10 | 24 | 10 | ab | ab |
| LA 15 | 19 | 10 | 18 | 10 | ab | ab |
| LA 16 | 22 | 10 | 33 | 25 | ab | ab |
| LA 17 | 31 | 25 | 37 | 60 | ab | ab |
| MA 13 | 22 | 10 | 24 | 10 | 20 | 10 |
| MA 14 | 27 | 25 | 25 | 10 | 26 | 25 |
| MA 16 | 24 | 10 | 31 | 25 | ab | ab |
| MA 17 | 20 | 10 | 30 | 25 | 31 | 25 |
| MA20 | 33 | 25 | 35 | 55 | 35 | 55 |
| MA 23 | 0 | 0 | 8 | below5th | 17 | below5th |
| MA 26 | 39 | 70 | 31 | 25 | ab | ab |
| MA 34 | 41 | 80 | 31 | 25 | ab | ab |
| MB 3 | 38 | 65 | 35 | 50 | 35 | 50 |
| MB 11 | 37 | 60 | 31 | 25 | 39 | 70 |
| MB 14 | 37 | 60 | 40 | 75 | 40 | 75 |
| MB29 | 18 | 10 | 16 | 10 | 16 | 10 |
| M B 26 | 41 | 80 | 37 | 65 | ab | ab |

**Appendix 6.4 – Results of ANOVA test of pre- test, post-test and far-
post-test data of Experimental and control groups**

Descriptive

ANOVA

| | Some of Squares | df | Mean square | F | Sig |
|------------------|-----------------|-----|-------------|--------|-------------|
| Pre test | | | | | |
| Between groups | 21.056 | 1 | 21.056 | .252 | .617 |
| Within groups | 8275.617 | 99 | 83.592 | | |
| Total | 8296.673 | 100 | | | |
| Post test | | | | | |
| Between groups | 2619.129 | 1 | 2619.129 | 31.606 | .000 |
| Within groups | 8203.960 | 99 | 82.868 | | |
| Total | 10823.089 | 100 | | | |
| Far test | | | | | |
| Between groups | 935.729 | 1 | 935.729 | 13.969 | .000 |
| Within groups | 5291.851 | 79 | 66.985 | | |
| Total | 6227.580 | 80 | | | |

| | N | Mean | Std. Deviation | Std Error | 95%confidence interval for mean | | Minimum | Maximum |
|------------------|-----|---------|----------------|-----------|---------------------------------|-------------|---------|---------|
| | | | | | Lower bound | Upper bound | | |
| Pre test | | | | | | | | |
| Control | 45 | 29.7778 | 10.75320 | 1.60299 | 26.5472 | 33.0084 | .00 | 44.00 |
| Experimental | 56 | 30.6964 | 7.61319 | 1.01736 | 28.6576 | 32.7353 | 15.00 | 46.00 |
| Total | 101 | 30.2871 | 9.10861 | .90634 | 28.4890 | 32.0853 | .00 | 46.00 |
| Post test | | | | | | | | |
| Control | 45 | 30.0222 | 10.00565 | 1.49155 | 27.0162 | 33.0383 | 8.00 | 47.00 |
| Experimental | 56 | 40.2679 | 8.31098 | 1.11060 | 38.0422 | 42.4936 | 17.00 | 46.00 |
| Total | 101 | 35.7030 | 10.40341 | 1.03518 | 33.6492 | 37.7567 | 8.00 | 46.00 |
| Far test | | | | | | | | |
| Control | 29 | 32.2759 | 9.52027 | 1.767287 | 28.6545 | 35.8972 | .1000 | 45.00 |
| Experimental | 52 | 39.3654 | 7.34855 | 1.01906 | 37.3195 | 41.4112 | 21.00 | 56.00 |
| Total | 81 | 36.8272 | 8.82297 | .98033 | 34.8762 | 38.7781 | 10.00 | 56.00 |

Appendix 6.5 Responses to each item of PTSN Form A and Form B by each student in all the grade of schools J, K, L, & M

Table A6.5.1 Responses to each item of PTNS Form A by each students of School J Grade 4A

| | | Student Identification Number (SIN) / Gender [Boy (B) / Girl (G)] | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Item | Pts | B | B | B | B | B | B | B | B | B | 10 | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| | 3 | 5 | 9 | 9 | 15 | 9 | 9 | 9 | 9 | 9 | | 9 | 9 | 9 | 15 | 15 | 9 | 17 | 9 | 9 | 15 | | 22 | 15 | 9 | 9 | 9 | 9 |
| 1 | 2 | 9 | 15 | 2 | 43 | 15 | 15 | 15 | 15 | 2 | | 15 | 23 | 15 | 43 | 9 | 15 | 9 | 15 | 15 | 23 | | 15 | 12 | 15 | 43 | 43 | 15 |
| | 1 | 43 | 2 | 15 | 9 | 43 | 36 | 22 | 8 | 15 | | 22 | 15 | 43 | 9 | 22 | 43 | 15 | 17 | 43 | 9 | | 9 | 22 | 12 | 36 | 15 | 43 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 22 | 1 | 22 | 18 | 22 | 23 | 22 | 22 | 1 | | 1 | 22 | 23 | 22 | 1 | 22 | 22 | 22 | 19 | 22 | | 9 | 22 | 22 | 12 | 23 | 12 |
| 2 | 2 | 1 | 22 | 16 | 19 | 18 | 18 | 1 | 18 | 22 | | 22 | 1 | 25 | 34 | 22 | 18 | 30 | 18 | 2 | 1 | | 22 | 9 | 18 | 5 | 18 | 22 |
| | 1 | 18 | 6 | 10 | 2 | 25 | 31 | 19 | 12 | 12 | | 18 | 16 | 19 | 14 | 18 | 1 | 18 | 33 | 22 | 19 | | 1 | 1 | 25 | 2 | 34 | 9 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 9 | 9 | 7 | 18 | 9 | 23 | 11 | 8 | 9 | | 11 | 23 | 9 | 23 | 11 | 9 | 9 | 11 | 9 | 11 | | 11 | 23 | 9 | 9 | 9 | 1 |
| 3 | 2 | 8 | 18 | 11 | 24 | 34 | 15 | 8 | 9 | 7 | | 8 | 7 | 7 | 7 | 8 | 12 | 30 | 9 | 7 | 8 | | 7 | 7 | 7 | 18 | 17 | 25 |
| | 1 | 11 | 11 | 8 | 41 | 8 | 38 | 7 | 11 | 18 | | 7 | 11 | 11 | 11 | 7 | 7 | 8 | 7 | 19 | 7 | | 8 | 11 | 11 | 7 | 11 | 8 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 9 | 9 | 23 | 9 | 43 | 9 | 9 | 8 | 9 | | 20 | 12 | 9 | 23 | 9 | 15 | 2 | 8 | 9 | 9 | | 9 | 12 | 22 | 5 | 24 | 9 |
| 4 | 2 | 15 | 12 | 3 | 38 | 40 | 6 | 20 | 22 | 12 | | 9 | 23 | 15 | 12 | 20 | 43 | 22 | 2 | 15 | 20 | | 23 | 23 | 0 | 12 | 15 | 40 |
| | 1 | 0 | 25 | 13 | 43 | 5 | 12 | 15 | 18 | 25 | | 5 | 14 | 2 | 14 | 15 | 22 | 9 | 9 | 0 | 15 | | 22 | 14 | 0 | 6 | 9 | 12 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 23 | 9 | 25 | 5 | 42 | 15 | 22 | 9 | 9 | | 22 | 30 | 9 | 15 | 22 | 22 | 9 | 9 | 22 | 15 | | 22 | 30 | 9 | 34 | 11 | 24 |
| 5 | 2 | 24 | 16 | 14 | 24 | 25 | 9 | 9 | 8 | 2 | | 19 | 48 | 0 | 22 | 15 | 43 | 33 | 33 | 9 | 22 | | 15 | 48 | 43 | 36 | 25 | 6 |
| | 1 | 25 | 2 | 21 | 35 | 8 | 1 | 1 | 15 | 16 | | 8 | 43 | 0 | 29 | 9 | 15 | 39 | 39 | 43 | 17 | | 16 | 20 | 0 | 9 | 7 | 8 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 46 | 9 | 46 | 16 | 7 | 36 | 25 | 9 | 9 | | 9 | 20 | 9 | 15 | 9 | 9 | 9 | 9 | 22 | 9 | | 9 | 20 | 9 | 25 | 9 | 9 |
| 6 | 2 | 43 | 12 | 19 | 44 | 22 | 15 | 9 | 15 | 2 | | 43 | 23 | 15 | 9 | 43 | 1 | 43 | 43 | 1 | 20 | | 22 | 4 | 43 | 9 | 15 | 43 |
| | 1 | 9 | 1 | 20 | 32 | 25 | 9 | 43 | 8 | 12 | | 44 | 15 | 43 | 43 | 44 | 36 | 15 | 44 | 15 | 15 | | 15 | 24 | 36 | 43 | 2 | 16 |

| Table A6.5.1 Responses to each item of PTNS Form A by each students of School J Grade 4A | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|---|----|----|----|----|----|----|----|----|--------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | Student Identification Number (SIN) / Gender [Boy (B) / Girl (G)] | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Item | Pts | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 7 | 3 | 22 | 22 | 36 | 34 | 16 | 23 | 15 | 15 | 22 | | 20 | 16 | 20 | 20 | 20 | 16 | 22 | 20 | 19 | 20 | | 16 | 20 | 16 | 42 | 23 | 9 |
| | 2 | 2 | 20 | 27 | 16 | 25 | 15 | 1 | 8 | 20 | | 31 | 24 | 16 | 1 | 15 | 22 | 30 | 22 | 1 | 15 | | 20 | 16 | 22 | 44 | 24 | 12 |
| | 1 | 3 | 9 | 5 | 6 | 22 | 2 | 7 | 9 | 2 | | 22 | 0 | 25 | 15 | 7 | 24 | 20 | 30 | 2 | 22 | | 22 | 23 | 24 | 46 | 2 | 16 |
| 8 | 3 | 12 | 9 | 26 | 1 | 9 | 2 | 15 | 30 | 9 | | 15 | 20 | 20 | 23 | 15 | 30 | 40 | 8 | 43 | 23 | | 9 | 11 | 9 | 2 | 6 | 2 |
| | 2 | 15 | 2 | 31 | 9 | 25 | 1 | 22 | 8 | 2 | | 11 | 0 | 43 | 12 | 30 | 36 | 2 | 7 | 36 | 15 | | 2 | 12 | 43 | 5 | 9 | 16 |
| | 1 | 10 | 12 | 6 | 10 | 22 | 17 | 20 | 15 | 12 | | 38 | 0 | 36 | 14 | 20 | 49 | 9 | 9 | 46 | 12 | | 1 | 23 | 0 | 9 | 2 | 6 |
| 9 | 3 | 39 | 18 | 43 | 33 | 5 | 33 | 30 | 8 | 18 | | 33 | 33 | 43 | 33 | 33 | 19 | 1 | 5 | 33 | 15 | | 44 | 23 | 39 | 39 | 33 | 39 |
| | 2 | 34 | 19 | 12 | 45 | 18 | 38 | 9 | 44 | 19 | | 38 | 36 | 36 | 41 | 38 | 18 | 33 | 8 | 39 | 30 | | 16 | 11 | 19 | 38 | 38 | 38 |
| | 1 | 35 | 7 | 24 | 34 | 26 | 23 | 15 | 9 | 7 | | 42 | 0 | 49 | 29 | 39 | 39 | 0 | 12 | 38 | 38 | | 24 | 3 | 0 | 44 | 34 | 8 |
| 10 | 3 | 1 | 9 | 2 | 22 | 9 | 20 | 1 | 15 | 9 | | 22 | 12 | 26 | 14 | 20 | 22 | 22 | 25 | 23 | 22 | | 29 | 2 | 22 | 25 | 23 | 22 |
| | 2 | 2 | 12 | 1 | 1 | 15 | 2 | 20 | 9 | 12 | | 20 | 23 | 40 | 22 | 22 | 1 | 33 | 22 | 0 | 20 | | 9 | 23 | 18 | 5 | 2 | 9 |
| | 1 | 4 | 2 | 5 | 6 | 22 | 15 | 15 | 8 | 2 | | 15 | 10 | 12 | 23 | 15 | 15 | 38 | 24 | 0 | 15 | | 15 | 12 | 0 | 12 | 18 | 1 |
| 11 | 3 | 5 | 9 | 9 | 30 | 5 | 15 | 15 | 2 | 9 | | 19 | 13 | 20 | 14 | 30 | 30 | 15 | 9 | 9 | 20 | | 44 | 12 | 9 | 1 | 17 | 43 |
| | 2 | 6 | 15 | 48 | 26 | 6 | 48 | 9 | 3 | 2 | | 14 | 30 | 40 | 12 | 15 | 9 | 30 | 2 | 15 | 15 | | 33 | 14 | 43 | 9 | 19 | 30 |
| | 1 | 7 | 2 | 43 | 1 | 8 | 21 | 22 | 8 | 15 | | 15 | 9 | 48 | 29 | 20 | 15 | 9 | 12 | 33 | 30 | | 0 | 23 | 0 | 6 | 37 | 46 |
| 12 | 3 | 8 | 22 | 33 | 43 | 10 | 15 | 22 | 8 | 2 | | 20 | 12 | 1 | 16 | 33 | 2 | 9 | 18 | 19 | 17 | | 9 | 20 | 15 | 25 | 9 | 9 |
| | 2 | 9 | 9 | 37 | 49 | 11 | 9 | 15 | 9 | 9 | | 43 | 23 | 12 | 15 | 30 | 9 | 2 | 19 | 47 | 15 | | 43 | 14 | 9 | 44 | 7 | 16 |
| | 1 | 10 | 2 | 27 | 36 | 13 | 12 | 9 | 2 | 22 | | 48 | 40 | 23 | 20 | 12 | 40 | 40 | 20 | 46 | 7 | | 44 | 23 | 16 | 43 | 1 | 8 |
| No. of | S.N | 2 | 6 | 1 | 0 | 3 | 1 | | 11 | 9 | 0 | 2 | 3 | 0 | 5 | 7 | 1 | 1 | 2 | 4 | 5 | 0 | 6 | 8 | 1 | 3 | 0 | 0 |
| No. of S.N. - Number of Self Nominations | | | | | | | | | | | Pts - Points | | | | | | | | | | | | | | | | | |

| Table A6.5.1 Responses to each item of PTNS Form A by each student of School J Grade 4A | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------|----|----|----|-------------|
| | | Student Identification Number (SIN) / Gender [Boy (B) / Girl (G)] | | | | | | | | | | | | | | | | | | Teacher | | | | |
| Item | Pts | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | Nominations |
| | 3 | 36 | 9 | 43 | 9 | 9 | 43 | 43 | 15 | 43 | 46 | 43 | 9 | | 9 | 43 | 9 | 44 | 43 | 9 | | 36 | 43 | 9 |
| 1 | 2 | 46 | 43 | 36 | 43 | 43 | 36 | 36 | 43 | 9 | 43 | 36 | 43 | | 36 | 15 | 43 | 9 | 44 | 43 | | 43 | 36 | 43 |
| | 1 | 9 | 36 | 9 | 44 | 36 | 9 | 9 | 36 | 46 | 36 | 9 | 15 | | 43 | 9 | 36 | 46 | 36 | 44 | | 15 | 9 | 30 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 36 | 22 | 1 | 31 | 22 | 18 | 18 | 22 | 18 | 1 | 46 | 22 | | 22 | 22 | 18 | 22 | 44 | 1 | | 22 | 18 | 9 |
| 2 | 2 | 46 | 18 | 31 | 34 | 18 | 34 | 24 | 1 | 31 | 18 | 43 | 46 | | 31 | 1 | 1 | 1 | 18 | 22 | | 1 | 1 | 1 |
| | 1 | 40 | 34 | 44 | 1 | 34 | 1 | 40 | 18 | 22 | 22 | 36 | 18 | | 1 | 18 | 34 | 34 | 22 | 35 | | 34 | 22 | 16 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 9 | 23 | 9 | 31 | 23 | 9 | 9 | 9 | 9 | 7 | 36 | 9 | | 7 | 7 | 9 | 9 | 7 | 9 | | 23 | 9 | 9 |
| 3 | 2 | 18 | 34 | 34 | 34 | 7 | 11 | 5 | 7 | 11 | 33 | 33 | 7 | | 9 | 11 | 23 | 7 | 43 | 11 | | 7 | 34 | 33 |
| | 1 | 0 | 7 | 25 | 43 | 11 | 7 | 11 | 11 | 7 | 11 | 43 | 11 | | 8 | 9 | 11 | 0 | 11 | 33 | | 34 | 7 | 25 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 9 | 12 | 40 | 37 | 9 | 12 | 9 | 9 | 9 | 9 | 38 | 9 | | 23 | 9 | 23 | 9 | 43 | 23 | | 12 | 9 | 9 |
| 4 | 2 | 40 | 14 | 46 | 49 | 23 | 15 | 12 | 12 | 12 | 22 | 33 | 15 | | 12 | 0 | 9 | 43 | 9 | 9 | | 23 | 12 | 12 |
| | 1 | 46 | 23 | 43 | 9 | 12 | 9 | 15 | 15 | 23 | 12 | 8 | 23 | | 9 | 0 | 0 | 49 | 12 | 20 | | 14 | 0 | 23 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 40 | 9 | 43 | 31 | 42 | 22 | 36 | 30 | 9 | 22 | 31 | 9 | | 30 | 22 | 43 | 30 | 11 | 9 | | 30 | 44 | 9 |
| 5 | 2 | 46 | 43 | 36 | 44 | 32 | 9 | 46 | 9 | 30 | 9 | 39 | 15 | | 22 | 9 | 30 | 9 | 9 | 30 | | 22 | 30 | 30 |
| | 1 | 0 | 36 | 44 | 45 | 37 | 15 | 30 | 22 | 12 | 46 | 33 | 22 | | 43 | 30 | 0 | 44 | 30 | 44 | | 9 | 15 | 11 |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | 9 | 9 | 43 | 30 | 9 | 43 | 20 | 9 | 9 | 9 | 38 | 9 | | 36 | 43 | 9 | 43 | 9 | 43 | | 36 | 43 | 43 |
| 6 | 2 | 40 | 30 | 44 | 34 | 43 | 15 | 15 | 43 | 43 | 43 | 1 | 43 | | 43 | 9 | 43 | 44 | 43 | 9 | | 9 | 9 | 9 |
| | 1 | 46 | 44 | 9 | 36 | 44 | 44 | 1 | 0 | 44 | 36 | 33 | 15 | | 46 | 46 | 0 | 9 | 46 | 1 | | 43 | 0 | 46 |

| Table A6.5.1 Responses to each item of PTNS Form A by each student of School J Grade 4A | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|--|----|----|----|----|----|----|----|----|----|----|----|---|----|----|----|----|----|----|---|---------|-------------|----|
| | | Student Identification Number (SIN) / Gender [Boy (B) /Girl (G)] | | | | | | | | | | | | | | | | | | | | Teacher | | |
| Item | Pts | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | Nominations | |
| 7 | 3 | 46 | 16 | 16 | 9 | 20 | 22 | 22 | 22 | 16 | 16 | 22 | 16 | | 16 | 22 | 43 | 9 | 22 | 20 | | 16 | 9 | 9 |
| | 2 | 40 | 44 | 40 | 43 | 16 | 20 | 16 | 16 | 20 | 43 | 16 | 9 | | 20 | 16 | 30 | 43 | 44 | 22 | | 24 | 12 | 43 |
| | 1 | 16 | 41 | 46 | 44 | 9 | 43 | 30 | 20 | 9 | 24 | 43 | 20 | | 22 | 20 | 16 | 44 | 20 | 16 | | 20 | 16 | 30 |
| 8 | 3 | 30 | 30 | 43 | 44 | 43 | 38 | 43 | 43 | 30 | 30 | 2 | 36 | | 30 | 9 | 30 | 9 | 44 | 43 | | 30 | 30 | 33 |
| | 2 | 48 | 33 | 44 | 31 | 9 | 43 | 30 | 46 | 43 | 9 | 43 | 43 | | 20 | 43 | 46 | 44 | 30 | 30 | | 38 | 44 | 43 |
| | 1 | 0 | 48 | 49 | 43 | 2 | 33 | 9 | 30 | 2 | 43 | 30 | 30 | | 43 | 2 | 9 | 30 | 9 | 46 | | 15 | 36 | 5 |
| 9 | 3 | 30 | 33 | 39 | 36 | 34 | 39 | 33 | 39 | 39 | 33 | 33 | 39 | | 38 | 34 | 39 | 39 | 38 | 39 | | 33 | 38 | 39 |
| | 2 | 33 | 44 | 34 | 33 | 33 | 43 | 39 | 34 | 33 | 30 | 39 | 33 | | 39 | 39 | 34 | 38 | 33 | 33 | | 39 | 33 | 33 |
| | 1 | 39 | 34 | 31 | 34 | 39 | 33 | 34 | 33 | 38 | 0 | 34 | 34 | | 33 | 33 | 33 | 33 | 39 | 0 | | 38 | 49 | 7 |
| 10 | 3 | 1 | 22 | 1 | 9 | 22 | 6 | 22 | 22 | 22 | 1 | 22 | 9 | | 22 | 9 | 9 | 9 | 22 | 22 | | 1 | 22 | 9 |
| | 2 | 18 | 23 | 9 | 1 | 20 | 38 | 2 | 1 | 6 | 2 | 9 | 2 | | 2 | 22 | 1 | 15 | 9 | 1 | | 22 | 1 | 2 |
| | 1 | 31 | 14 | 22 | 22 | 9 | 33 | 9 | 2 | 9 | 22 | 2 | 0 | | 9 | 2 | 22 | 22 | 2 | 9 | | 18 | 23 | 25 |
| 11 | 3 | 30 | 23 | 26 | 30 | 30 | 30 | 30 | 9 | 30 | 30 | 30 | 30 | | 9 | 30 | 30 | 44 | 30 | 30 | | 30 | 30 | 30 |
| | 2 | 43 | 44 | 30 | 31 | 15 | 38 | 4 | 17 | 9 | 38 | 9 | 43 | | 30 | 15 | 15 | 30 | 15 | 5 | | 9 | 15 | 5 |
| | 1 | 33 | 12 | 45 | 38 | 9 | 9 | 15 | 30 | 15 | 15 | 15 | 9 | | 15 | 0 | 43 | 9 | 9 | 9 | | 44 | 9 | 25 |
| 12 | 3 | 30 | 16 | 36 | 2 | 24 | 20 | 9 | 16 | 43 | 30 | 36 | 36 | | 9 | 9 | 36 | 44 | 44 | 9 | | 9 | 44 | 44 |
| | 2 | 9 | 15 | 43 | 15 | 9 | 9 | 20 | 22 | 9 | 20 | 43 | 20 | | 36 | 43 | 43 | 43 | 9 | 20 | | 20 | 36 | 9 |
| | 1 | 0 | 20 | 9 | 9 | 2 | 33 | 0 | 44 | 20 | 9 | 9 | 9 | | 43 | 36 | 9 | 9 | 43 | 43 | | 36 | 9 | 36 |
| No. of | S.N | 0 | 0 | 1 | 5 | 1 | 4 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 6 | 7 | 0 | 1 | 0 | 0 | 0 | 1 |
| | | No. of S.N. - Number of Self Nominations | | | | | | | | | | | | | | | | | | | | | | |

Appendix 6.6 Illustration of Sum & talent score values of each item of each student for Form A & B of all Schools

Table A6.6.1 Sum & talent score values of each item of each student for Form A - School J Grade 4A

| | | Student Identification Number (SIN) / Gender [Boy (B) / Girl (G)] | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----------|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Item | Pts | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| | Sum | | | | | | | | | 93 | | | | | | 53 | | | | | | | | 7 | |
| | tal score | | | | | | | | | 69 | | | | | | 39 | | | | | | | | 5 | |
| | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 21 | 3 | 0 |
| 2 | 2 | 10 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 11 | 1 | 0 | 0 | 7 | 0 | 1 |
| | 1 | 6 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 7 | 3 | 0 | 0 | 5 | 0 | 0 |
| | Sum | 47 | | | | | | | | 6 | | | | | | | | | 47 | | | | 82 | | |
| | tal score | 35 | | | | | | | | 4 | | | | | | | | | 35 | | | | 61 | | |
| | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 22 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 |
| 3 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 13 | 5 | 3 | 0 | 5 | 1 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 1 |
| | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 6 | 1 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| | Sum | | | | | | | 52 | 19 | 73 | | 42 | | | | 2 | | | 10 | | | | | 23 | |
| | tal score | | | | | | | 39 | 14 | 54 | | 31 | | | | 1 | | | 7 | | | | | 17 | |
| | 3 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 22 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 1 |
| 4 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 9 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 | 0 |
| | 1 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 6 | 0 | 0 | 5 | 1 | 4 | 5 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 3 | 0 |
| | Sum | 0 | | | | | | | | 80 | | | 36 | | | 20 | | | | | 10 | | 10 | 28 | |
| | tal score | | | | | | | | | 59 | | | 27 | | | 15 | | | | | 7 | | 7 | 21 | |
| | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 5 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 2 |
| | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| | Sum | | | | | | | | | 53 | | | | | | 17 | | | | | | | 36 | | |
| | tal score | | | | | | | | | 39 | | | | | | 12 | | | | | | | 26 | | |
| | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 |
| 6 | 2 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 0 |
| | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| | Sum | | | | | | | | | 87 | | | | | | 19 | | | | | | 12 | | 7 | |
| | tal score | | | | | | | | | 64 | | | | | | 13 | | | | | | 9 | | 5 | |

Table A6.6.1 Sum & talent score values of each item of each student for Form A - School J Grade 4A

| | | Student Identification Number (SIN) / Gender [Boy (B) / Girl (G)] | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----------|---|----|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| Item | Pts | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 7 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 12 | 0 | 0 | 1 | 9 | 0 | 10 | 2 | 0 | 0 | 0 |
| | 2 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 3 | 8 | 0 | 0 | 0 | 6 | 0 | 4 | 0 | 3 | 1 | 0 |
| | 1 | 0 | 4 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 6 | 0 | 5 | 1 | 3 | 1 | 0 |
| | Sum | | | | | | | | | 18 | | | | | | 13 | 56 | | | | 45 | | 43 | | | | |
| | tal score | | | | | | | | | 13 | | | | | | 10 | 42 | | | | 33 | | 32 | | | | |
| 8 | 3 | 1 | 4 | 0 | 0 | 0 | 1 | 0 | 1 | 7 | 0 | 1 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 |
| | 2 | 1 | 4 | 0 | 0 | 1 | 0 | 1 | 1 | 4 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| | 1 | 1 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 6 | 2 | 0 | 3 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 0 | 0 |
| | Sum | | 24 | | | | | | | 35 | | | | | | 15 | | | | | | | | | | | |
| | tal score | | 18 | | | | | | | 26 | | | | | | 11 | | | | | | | | | | | |
| 9 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 |
| | Sum | | | | | | | | | 3 | | | | | | 4 | | | | | | | | | | | |
| | tal score | | | | | | | | | 2 | | | | | | 3 | | | | | | | | | | | |
| 10 | 3 | 6 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 17 | 2 | 0 | 2 | 1 |
| | 2 | 8 | 7 | 0 | 0 | 1 | 1 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 4 | 0 | 5 | 3 | 0 | 0 | 0 |
| | 1 | 1 | 6 | 0 | 1 | 1 | 1 | 0 | 1 | 5 | 1 | 0 | 3 | 0 | 1 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 2 | 1 | 0 | 0 |
| | Sum | 35 | 26 | | | | | | | 41 | | | | | | 14 | | | | | 14 | | 67 | 14 | | | |
| | tal score | 26 | 19 | | | | | | | 30 | | | | | | 10 | | | | | 10 | | 50 | 10 | | | |
| 11 | 3 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 1 | 1 | 3 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 |
| | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 2 | 9 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 9 | 0 | 0 | 2 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| | Sum | | | | | | | | | 48 | | | | | | 33 | | | | | | | | | | | |
| | tal score | | | | | | | | | 36 | | | | | | 24 | | | | | | | | | | | |
| 12 | 3 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 9 | 1 | 0 | 1 | 0 | 0 | 2 | 3 | 1 | 1 | 1 | 3 | 0 | 2 | 0 | 1 | 1 | 0 |
| | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 1 | 1 | 0 | 1 | 5 | 1 | 0 | 0 | 1 | 5 | 0 | 1 | 1 | 0 | 0 | 0 |
| | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 1 | 2 | 0 | 0 | 0 |
| | Sum | | 14 | | | | | | | 60 | | | | | | 16 | | | | | 23 | | | | | | |
| | tal score | | 10 | | | | | | | 44 | | | | | | 12 | | | | | 17 | | | | | | |

Table A6.6.1 Sum & talent score values of each item of each student for Form A - School J Grade

| | | Student Identification Number (SIN) / Gender [Boy (B) /Girl (G)] | | | | | | | | | | | | | | | | | | | | | | | Teacher |
|------|-----------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------------|
| Item | Pts | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | Nominations |
| | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 1 | 0 | 0 | 0 | 9 |
| 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 1 | 0 | 1 | 0 | 0 | 0 | 43 |
| | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 0 | 2 | 0 | 0 | 0 | 30 |
| | Sum | | | | | | | | | | 26 | | | | | | | 57 | | | | | | | |
| | tal score | | | | | | | | | | 19 | | | | | | | 42 | | | | | | | |
| | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 9 |
| 2 | 2 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 |
| | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 6 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 16 |
| | Sum | | | | | | | | 11 | | | | | | | | | | | | | | | | |
| | tal score | | | | | | | | 8 | | | | | | | | | | | | | | | | |
| | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 3 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| | Sum | | | | | | | 5 | 11 | | | | | | | | | | | | | | | | |
| | tal score | | | | | | | | 8 | | | | | | | | | | | | | | | | |
| | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 12 |
| | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 23 |
| | Sum | | | | | | | | | | | | | | | | | 12 | | | | | | | |
| | tal score | | | | | | | | | | | | | | | | | 9 | | | | | | | |
| | 3 | 0 | 0 | 0 | 6 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 9 |
| 5 | 2 | 0 | 0 | 0 | 4 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 1 | 0 | 2 | 0 | 2 | 0 | 30 |
| | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| | Sum | | | | 19 | | | | | | | | | | | | | | | | | | | | |
| | tal score | | | | 14 | | | | | | | | | | | | | | | | | | | | |
| | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 43 |
| 6 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 15 | 3 | 0 | 0 | 0 | 0 | 0 | 9 |
| | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 0 | 4 | 0 | 0 | 0 | 46 |
| | Sum | | | | | | | | | | 10 | | | | | | | 53 | 13 | | | | | | |
| | tal score | | | | | | | | | | 7 | | | | | | | 39 | 9 | | | | | | |

| Table A6.6.1 Sum & talent score values of each item of each student for Form A - School J Grade 4A | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---------|----|----|----|-------------|
| | | Student Identification Number (SIN) / Gender [Boy (B) /Girl (G)] | | | | | | | | | | | | | | | | | | | Teacher | | | | |
| Item | Pts | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | Nominations |
| 7 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 9 |
| | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 43 |
| | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 30 |
| | Sum | | | | | | | | | | 3 | | | | | | | 11 | | | | | | | |
| | tal score | | | | | | | | | | 2 | | | | | | | 8 | | | | | | | |
| 8 | 3 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 33 |
| | 2 | 0 | 0 | 0 | 4 | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 3 | 0 | 2 | 0 | 1 | 0 | 43 |
| | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 2 | 5 |
| | Sum | | | | 42 | | | | | | | | | | | | | 35 | | | | | | | |
| | tal score | | | | 31 | | | | | | | | | | | | | 26 | | | | | | | |
| 9 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 13 | 2 | 0 | 1 | 0 | 3 | 12 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 39 |
| | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 9 | 4 | 0 | 2 | 0 | 7 | 6 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 33 |
| | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 7 | 1 | 0 | 0 | 4 | 5 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 7 |
| | Sum | | | | | | | 66 | 21 | | | | 27 | 50 | | | | | | | | | | | |
| | tal score | | | | | | | 49 | 16 | | | | 20 | 37 | | | | | | | | | | | |
| 10 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| | Sum | | | | | | | | | | | | | | | | | | | | | | | | |
| | tal score | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 3 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 30 |
| | 2 | 0 | 0 | 0 | 6 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 5 |
| | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 25 |
| | Sum | | | | 65 | | | | | | | | | | | | | | | | | | | | |
| | tal score | | | | 48 | | | | | | | | | | | | | | | | | | | | |
| 12 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 44 |
| | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 1 | 0 | 1 | 9 |
| | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 4 | 2 | 0 | 1 | 0 | 1 | 0 | 36 |
| | Sum | | | | | | | | | | 19 | | | | | | | 24 | 13 | | | | | | |
| | tal score | | | | | | | | | | 14 | | | | | | | 18 | 10 | | | | | | |

Table A6.7.1 Teacher nominatios, item scores, sub-group scores and ranks gained by the students for Form A - School J

| Student Number | Gender | Self-Nominations | Academic | | | | | | Mech-Tech | | | | | Drama | | | | Socio-Affect | | | | |
|----------------|--------|------------------|--------------------|-------------------|-------------------|----------------------|----------------|------|------------------|--------------------|-------------------|----------------|------|------------------|---------------|----------------|------|-------------------|--------------------|----------------|----------------|------|
| | | | 1- Enclopedia Rank | 6- Lightning Rank | 7- Scientist Rank | 12- Bright Idea Rank | Subgroup score | Rank | 2- Handyman Rank | 4- Programmer Rank | 10- Mechanic Rank | Subgroup score | Rank | 3- comedian Rank | 9- Actor Rank | Subgroup score | Rank | 5- Counselor Rank | 8- Stimulator Rank | 11- Judge Rank | Subgroup score | Rank |
| JA 26 | B | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 27 | B | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 28 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 29 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 30 | G | 1 | * | | | * | | | | | | | 7 | | | *14 | 31 | I | *48 | I | 31 | II |
| JA 31 | G | 5 | | | | | | | | | | | | | | | | | | | | |
| JA 32 | G | 1 | | | | | | | | | | | | | | | | | | | | |
| JA 33 | G | 4 | | | | | | | | | | *4 | *49 | I | 27 | II | | * | | | | |
| JA 34 | G | 1 | | | | | 5 | | | 8 | | 8 | 16 | | 12 | | | | | | | |
| JA 35 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 36 | G | 0 | 19 | IV | 7 | 2 | *14 | 11 | | | | | | | | | | | | | | |
| JA 37 | G | ab | | | | | | | | | | | | | | | | | | | | |
| JA 38 | G | 2 | | | | | | | | | | 1 | 20 | III | 11 | IV | | | | | | |
| JA 39 | G | 1 | | | | | | | | | | 0 | *37 | II | 19 | III | | | | | | |
| JA 40 | G | 0 | | | | | | | | 7 | | | | | | | | | | | | |
| JA 41 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 42 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 43 | G | 6 | *42 | II | *39 | II | 8* | 18 | II | 26 | II | | | | | 8 | *26 | II | 8 | | 8 | |
| JA 44 | G | 7 | 5 | | 9 | | 6 | *10 | 8 | | | | 6 | | | | 6 | | 7 | | | |
| JA 45 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 46 | G | 1 | 5 | | *7 | | | | | | | | | | | | | | | | | |
| JA 47 | G | ab | | | | | | | | | | | | | | | | | | | | |
| JA 48 | G | 0 | | | | | | | | | | | | | | | | | | | | |
| JA 49 | G | 1 | | | | | | | | | | | | | | | | | | | | |

Table A6.7.13 Teacher nominations, item scores, sub-group scores and ranks gained by the students for Form B - School J

| Student Number | Gender | Physical | | | | | | | Music | | | | | Visual | | | | | Interpersonal | | | | | | | | | | | |
|----------------|--------|------------------|------------------|----------------------|---------------|----------------|------|------------------|----------------|-----------------|----------------|------|----------------|----------------------|----------------|------|----------------|------------------|---------------------|------------------|----------------|------|-----|----|----|---|-----|---|----|---|
| | | Self-Nominations | 1- Hercules Rank | 8- Tireless One Rank | 12- Hare Rank | Subgroup score | Rank | 2- Musician Rank | 5- Singer Rank | 10- Dancer Rank | Subgroup score | Rank | 4- Artist Rank | 9- Craftsperson Rank | Subgroup score | Rank | 3- leader Rank | 6- Sociable Rank | 7 - Spokperson Rank | 11- Speaker Rank | Subgroup score | Rank | | | | | | | | |
| JA 1 | B | 2 | 6 | 7 | 8 | | | 7 | *11 | 10 | | | 14 | 15 | III | 15 | III | 7 | 6 | | | 10 | IV | | | | | | | |
| JA 2 | B | 8 | 5 | *24 | III | *52 | I | 27 | I | | | | *71 | I | 17 | II | 44 | I | 8 | 8 | | 11 | IV | 7 | | | | | | |
| JA 3 | B | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 4 | B | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 5 | B | 8 | *4 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 6 | B | 1 | | | 10 | | | 7 | | | | | | | | | | | | | | | | | | | | | | |
| JA 7 | B | 0 | | *0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 8 | B | 7 | | | 7 | | | 7 | | | | | 19 | III | *4 | 12 | IV | | | | | | | | | | | | | |
| JA 9 | B | 10 | 30 | II | 26 | II | 22 | III | 26 | II | 7 | | 6 | | *66 | II | 20 | I | 43 | II | *32 | I | *26 | I | 36 | I | 53* | I | 37 | I |
| JA 10 | B | ab | | 5 | *2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 11 | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 12 | B | 2 | 10 | | | | | | | | | | | | | | | 7 | | | | | | | | | | | | |
| JA 13 | B | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 14 | B | 5 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 15 | B | 8 | 5 | | 13 | IV | | | | | | | 6 | | | | 16 | III | 6 | | *16 | II | 18 | II | 13 | | | | | |
| JA 16 | B | 3 | | *7 | | 15 | IV | | | | | | 6 | | | | | | | | | | | | | | | | | |
| JA 17 | B | 2 | *34 | I | 0 | | 0 | | 11 | IV | | | | | | | | | | | | | | | | | | | | |
| JA 18 | B | 2 | | | | | | | | | | | | 13 | IV | | | 9 | | | | | | | | | | | | |
| JA 19 | B | 6 | 12 | IV | | | | | | 5 | | | | | | | | | | | | | | | | | | | | |
| JA 20 | B | 6 | 7 | | 7 | | | | | 7 | | | | | | | | 7 | | | | | | | | | | | | |
| JA 21 | B | ab | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 22 | B | 4 | * | | | | | | * | 12 | | | | 7 | | | | 12 | III | | | | | | | | | | | |
| JA 23 | B | 9 | | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| JA 24 | B | ab | | | | | | | | | | | 7 | | | | | | | | | | | | | | | | | |
| JA 25 | B | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Appendix 6.8 Detail presentation of data collected for research Objective 3. (Responses of students and teachers for PTSN Forms A and B

In Appendix 6.8 the data collected for PTSN Forms A and B of all classes are sub-categorised in Appendices 6.8.1 to 6.8.12. Only the data presentation under school J4A is illustrated in this Appendix 6.8

Appendix 6.8.1 Detail presentation of data collected for research Objective 3 of class J4A

Grade J4A

There were 47 students in the class register, but only 45 and 44 students responded to the nomination forms: Form A and Form B respectively. The item scores of students for nomination Form A and Form B are presented in Table A6.5.1 and Table A6.5.13 of Appendix 6.5. The sum and the talent [item] scores for nomination Form A and Form B are given in Table A6.6.1 and Table 6.6.13 of Appendix 6.6. The final score sheets of Form A and B, indicating talent scores, subgroup scores, self-nominations, teacher nominations and the rank of the first four highest students of each item and each subgroup, are presented in Table A6.7.1 and Table A6.7.13 of Appendix 6.7.

There were 10, 40+ talent scores among the nominations for Form A, showed a good IPA within the group. There were only 5, 40+ talent scores among the nominations Form B. This showed below average IPA within the group. However the number of 40+ scores were in the acceptable level [minimum acceptable level is 4 40+ scores]. There were 2, 39+ values too in this group.

Form A nominations

Academic area

1. The students JA9, JA432, JA15 and both JA 15 and JA36 were rated first, second, third, and fourth based on subgroup score in domain 'Academic' area by peer nominations. Even though the IPA is above average, the talent scores of each item and subgroup scores are low except in first 2.

However, this sub group has received 4, 40+ values, in which three have received by student JA9 and other one by JA43. Out of 12 nominations, peers offered 11 nominations to these students. Peer offered the other nomination to student JA 22 for item 'Scientist'. His score for this item was 32. He received the 2nd place in that item. This indicated the abilities in this student in the particular area even though he is

not among top 4 in the subgroup This shows he has some notable talent in the area denote by ‘Scientist’

2. Out of 12 teacher nominations 8 nominations were given to above top four students that were nominated by peers. Teacher offered 2 nominations out of 4 remaining nominations to students JA 46 and JA44, for items ‘lighting’ and ‘Bright idea’ respectively. These items scored 7 and 10 by peer nominations respectively. The teacher offered the other two teacher nominations to student JA30 for items ‘Encyclopedia’ and ‘Scientist’. However, the student received zero nominations by peers for these items.

Mechanical-Technical area (Mech-Tech)

1. Students, JA22,JA9, JA1 and JA15 were rated first, second, third, and fourth based on subgroup score in ‘Mech-Tech’ area by peer nominations. Out of 9 peer nominations these students received 6 nominations. The other 3 nominations received by students JA12, JA23 and JA18 for items ‘Programmer’ and ‘Handy man’. The teacher too had nominated students JA12 and JA23. This suggested, even though they do not demonstrate their talents in the entire area ‘Mechanical –Technical’, they have talents in particular field [Programmer]. Further, JA18, scored at 2nd place in the particular item [Handy man] by peer nominations showed his remarkable talents in that field. However he received zero scores for other 2 items in the subgroup and therefore he was not placed among the first 4 students.
2. Out of 9 teacher nominations the top 4 students received 4 nominations. Out of other 5 nominations 3 nominations were offered to the students JA12 (discussed above), JA23 (discussed above), and JA2 [for item Mechanic]. These students received 2nd, 3rd and 4th peer nominations respectively to these items too. Thus denoted their remarkable talents in the specific items, even though they were not among the top 4 students by sub group score.

Drama

1. Students, JA9, JA33, JA39 and JA38 were rated first, second, third, and fourth based on subgroup score in ‘Drama area’, by peer nominations. Out of 6 peer nominations 4nominations were offered to these students. Students JA24 and JA34 received the other two nominations [2nd and 3rd respectively] for item Comedian’. However, the item score gained by student JA34 is very low [it is Even though he received the 3rd place for this item.

2. Out of 6 teacher nominations 4 nominations were matched with peer of top 4 students nominations. The other 2 teacher nominations were received by the students by JA25 and JA7. However, peers had not offered a single nomination for them.

Socio-Affective (Interpersonal abilities)

1. Students, JA9, JA30, and JA15 were the 1st, 2nd, and 3rd, respectively in subgroup score in Socio-affective area. There was no 4th person to be nominated with reasonable score. Out of 9 peer nominations peers offered 7 nominations for these students. Peers offered the other 2 nominations to students JA2 and JA22. They were nominated to 3rd and 2nd places in items 'Stimulator' and 'Counselor' respectively by peers. This suggested that they could have reasonable talents in the areas of the two particular items, even though they have not scored high subgroup score to place them among the top 4 students.
2. Out of nine teacher nominations only 3 nominations were offered to top 3 students nominated by peers. Out of other 6 nominations, 5 nominations were offered to students JA25, JA11, JA5 (2 nominations), and JA 33. These students were not received any peer nominations. The teacher offered the other nomination to the student JA43 for the item 'Stimulator'. Student JA43 received 2nd nomination by peers for that particular item even though he was not among top 3 students by subgroup score.

Self nominations

Out of 45 students, only 8 students participated in more than 5 nominations. However, out of these 8 students, only JA8 and JA23 has over nominated [Compared to peer nominations they received].

However, the student J23 has got 2nd and 3rd nominations for 2 items. All the other 6 students received more peer nominations even more than the number of their self nominations. This showed that they had not nominated themselves carelessly but were aware of their talents. All the other students participated in very few self-nominations, and they received few or zero peer nominations. In general, except students JA8 and JA23 others seem to have fair understanding on their talents.

Form B nominations

Physical abilities

1. Students, JA2, JA9, JA17 and JA40, were in the 1st, 2nd, 3rd, and 4th places in the subgroup score in area of physical abilities, by peer nominations. Out of nine peer nominations, 8 nominations were offered to these four students. Other peer nominations were offered to student JA35, and it was the 3rd nomination for item 'Hercules'. However the score for the item was only 13. The sub group score of student JA 17, (above 4th) is 12, however, he has scored 34 for item 'Hercules' and it is the 1st nomination for it. It is a teacher nomination too. Therefore even though he has got zero nominations for other two items it can be suggested he has talents in the area of 'Hercules'.
2. Out of 9 teacher nominations, 4 nominations were offered to top 4 students nominated by peers. Out of other teacher nominations, one nomination was offered to the student JA17 (discussed above). The other 4 nominations were offered to 4 students who had received zero or very little nominations by peers.

Music

1. Students, JA39, JA33, JA38 and JA30 scored at top three places respectively in subgroup score in area of 'Music', by peer nominations. These students received all the nine peer nominations, and this showed a good inter-peer agreement in this nomination.
2. Out of 9 teacher nominations, the top 4 students received only 5 teacher nominations. The other teacher nominations were offered to students JA22, JA31, JA49 and JA1. Since they have got zero or very little nominations from peers their talents nominated by the teacher is doubtful.

Visual art

1. Students, JA2, JA9, JA1, and JA8 were the 1st, 2nd, 3rd, and 4th in subgroup score in area of Visual art, by peer nominations. All 6 nominations by peers were received by these four students. This suggested a good inter-peer agreement.
2. Out of 6 teacher nominations, 3 nominations were matched with peer nomination of top 4 children. The other 3 nominations were offered to JA46, JA 44, and JA33, who have scored low or zero nominations from peers for all

the items in this sub group. Hence, the presence of these talents identified by the teacher is doubtful.

Interpersonal abilities

1. Students, JA9, JA15, and both JA30 and JA33, were nominated as 1st, 2nd, and 3rd, in subgroup score in area of 'Interpersonal abilities' by peers. Out of 12 peer nominations 10 nominations were offered by peers to above top 3 students. However, except in the student JA9, the sub group score of other 2 students were very low. Therefore, even though the majority of scores were offered by peers to the above 4 students it is a doubt whether the students JA15, JA30, and JA33 have talents to a remarkable level.

2. Out of 12 teacher nominations, 7 nominations were matched with peer nominations of above top 3 students. The teacher offered the remaining nominations to students JA44 [received 3 teacher nominations for 3 items], JA 36 and Ja34. These students scored poorly in peer nomination. Therefore, the talents recognized by the teacher in them are doubtful.

Self nominations

Similar to the nominations for the Form A, students do not seem over nominated to the Form B. For example, except 2, majority of students who received zero scores not participated in self nomination. These 2 students also nominated themselves only once. Similarly, the students who self nominated in between 5 or less than 5 times received very few nominations from peers. Out of 44 students, only 11 students had self-nominated more than 5 times. Out of these 11 students, only 4 seem to be over nominated. It could be suggested that others have done a fair estimate on themselves.

Appendix 6.9 Illustration of teacher peer nomination relationship

Appendix 6.9 consisting with two tables. In **Table A6.9.1** shows the number of teacher nominations that matched with 1st, 2nd, and 3rd peer nominations. **Table A6.9.2** shows the number of teacher nominations that matched with 1st, 2nd, 3rd and 4th peer nominations Each sub-group in PTSN forms A and B have 2–4 items. For each item peers and teacher has 3 nominations. For example Academic subgroup has 4 items, therefore it has 12 peer nominations and 12 teacher nominations.

For example, in **Table A6.9.1** in **class J4A** out of 1st, 2nd and 3rd nominations by peers (for 4 items peers used 12 nominations) only 6 teacher nominations are matched. However, in **Table A 6.9.2** the same teacher's 7 nominations (See Table 6.9.2, classJ4A – Academic column.) are matched when compared with 1st, 2nd, 3rd, and 4th nominations of peers. Both instances teacher and peers used 12 nominations.

In the fractions indicated in the tables the numerator denotes the number of teacher nominations tallied with peer nomination. The denominator of each fraction denotes the number of peer nominations (this is same as the number of items in each domain x 3, because peers have 3 nominations for each item).

Table A6.9.1 Total & percentages of teacher nominations that matched with first three peer nomination

| School | class | Academic | Mech- Tech | Drama | Socio-afft | Physical | Music | Visual | Inter- personal |
|-------------------|-------------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------------|
| School J | J4A | 6/12 | 5/9 | 3/6 | 2/3 | 4/9 | 5/9 | 2/6 | 7/12 |
| | J4B | 7/12 | 4/9 | 3/6 | 3/9 | 2/9 | 7/9 | 2/6 | 7/12 |
| | J4C | 7/12 | 1/9 | 1/6 | 2/9 | 3/9 | 4/9 | 1/6 | 6/12 |
| | J4D | 9/12 | 2/9 | 3/6 | 6/9 | 4/9 | 8/9 | 3/6 | 8/12 |
| | J4E | 5/12 | 2/9 | 3/6 | 5/9 | 3/9 | 2/9 | 4/6 | 6/12 |
| | J4F | 4/12 | 5/9 | 2/6 | 2/9 | 1/9 | 5/9 | 3/6 | 6/12 |
| | J4G | 7/12 | 4/9 | 4/6 | 5/9 | 4/9 | 5/9 | 3/6 | 8/12 |
| | J4H | 4/12 | 3/9 | 0/6 | 2/9 | 0/9 | 0/9 | 0/6 | 4/12 |
| | Total | 49/96 | 26/72 | 19/48 | 27/72 | 21/72 | 36/72 | 18/48 | 52/96 |
| percentage | 51.04 | 36.11 | 39.58 | 37.5 | 29.16 | 50 | 37.5 | 54.16 | |
| School K | K4A | 11/12 | 4/9 | 3/6 | 6/9 | 6/9 | 5/9 | 5/6 | 9/12 |
| | Total | 11/12 | 4/9 | 3/6 | 6/9 | 6/9 | 5/9 | 5/6 | 9/12 |
| | percentage | 91.6 | 44.44 | 50 | 66.66 | 66.66 | 55.55 | 83.33 | 75 |
| School L | L4A | 6/12 | 7/9 | 3/6 | 5/9 | 5/9 | 6/9 | 4/6 | 8/12 |
| | Total | 6/12 | 7/9 | 3/6 | 5/9 | 5/9 | 6/9 | 4/6 | 8/12 |
| | percentage | 50 | 77.77 | 50 | 55.55 | 55.55 | 66.66 | 66.66 | 66.66 |
| School M | MA | 9/12 | 5/9 | 3/6 | 6/9 | 5/9 | 7/9 | 4/6 | 8/12 |
| | MB | 9/12 | 5/9 | 4/6 | 5/9 | 6/9 | 6/9 | 3/6 | 8/12 |
| | Total | 18/24 | 10/18 | 7/12 | 11/18 | 11/18 | 13/18 | 7/12 | 16/24 |
| | percentage | 75 | 55.55 | 58.33 | 61.11 | 61.11 | 72.22 | 58.33 | 66.66 |

Appendix 6.9

Table A6.9.2 Total & percentages of teacher nominations that matched with first three peer nomination

| School | class | Academic | Mech- Tech | Drama | Socio- afft | Physical | Music | Visual | Inter- personal |
|-------------------|-------------------|--------------|---------------|--------------|----------------|--------------|--------------|--------------|--------------------|
| School J | J4A | 7/12 | 6/9 | 3/6 | 3/3 | 4/9 | 6/9 | 2/6 | 7/12 |
| | J4B | 8/12 | 5/9 | 4/6 | 3/9 | 2/9 | 7/9 | 3/6 | 7/12 |
| | J4C | 8/12 | 2/9 | 2/6 | 2/9 | 3/9 | 4/9 | 1/6 | 7/12 |
| | J4D | 10/12 | 4/9 | 3/6 | 7/9 | 4/9 | 8/9 | 3/6 | 9/12 |
| | J4E | 6/12 | 5/9 | 3/6 | 7/9 | 4/9 | 3/9 | 4/6 | 8/12 |
| | J4F | 5/12 | 5/9 | 4/6 | 2/9 | 1/9 | 5/9 | 3/6 | 6/12 |
| | J4G | 7/12 | 6/9 | 4/6 | 5/9 | 5/9 | 6/9 | 4/6 | 10/12 |
| | J4H | 4/12 | 4/9 | 0/6 | 2/9 | 0/9 | 0/9 | 0/6 | 4/12 |
| | Total | 55/96 | 37/72 | 23/48 | 31/72 | 23/72 | 39/72 | 20/48 | 58/96 |
| percentage | 57.29 | 51.38 | 47.91 | 43.05 | 31.94 | 54.16 | 41.66 | 60.41 | |
| School K | K4A | 12/12 | 5/9 | 5/6 | 7/9 | 6/9 | 7/9 | 5/6 | 10/12 |
| | Total | 12/12 | 5/9 | 5/6 | 7/9 | 6/9 | 7/9 | 5/6 | 10/12 |
| | percentage | 100 | 55.55 | 83.33 | 77.77 | 66.66 | 77.77 | 83.33 | 83.33 |
| School L | L4A | 7/12 | 7/9 | 4/6 | 6/9 | 7/9 | 8/9 | 4/6 | 9/12 |
| | Total | 7/12 | 7/9 | 4/6 | 6/9 | 7/9 | 8/9 | 4/6 | 9/12 |
| | percentage | 58.33 | 77.77 | 66.66 | 66.66 | 77.77 | 88.88 | 66.66 | 75 |
| School M | MA | 10/12 | 6/9 | 3/6 | 7/9 | 5/9 | 7/9 | 5/6 | 9/12 |
| | MB | 9/12 | 5/9 | 4/6 | 6/9 | 6/9 | 6/9 | 3/6 | 8/12 |
| | Total | 19/24 | 11/18 | 7/12 | 13/18 | 11/18 | 13/18 | 8/12 | 17/24 |
| | percentage | 79.16 | 61.11 | 58.33 | 72.22 | 61.11 | 72.22 | 66.66 | 70.83 |

Appendix 6.10 Teacher –Peer nominating patterns for all the sub-groups for PTSN Forms A & B towards gender

Each table shows the number of boys and girls nominated by teacher and peers of the each class for each sub-group. This table was formulated by counting the number of girls and boys nominated by peers (first 3 nominations) and teacher of each class for each item of the particular sub-group. Total number of boys and girls of each class is number of items in each sub-group x 3. However, some instances there were more than one 1st, 2nd or 3rd places in some classes. Such instances the total number of peer nominated girls and boys are more than number of items x 3. The number of teacher nominations is the same. But some instances it was less than that, when the teachers have offered less than three nominations for some items.

Table A6.10.1 Teacher-Peer nomination patterns for Academic Sub-

| Grades | Peer | | Teacher | |
|-------------------|--------------|--------------|--------------|--------------|
| | Boys | Girls | Boys | Girls |
| JA | 9 | 3 | 4 | 8 |
| JB | 6 | 6 | 5 | 7 |
| JC | 6 | 8 | 6 | 5 |
| JD | 8 | 4 | 8 | 4 |
| JE | 7 | 5 | 3 | 9 |
| JF | 8 | 6 | 6 | 4 |
| JG | 13 | 0 | 10 | 2 |
| JH | 4 | 9 | 3 | 6 |
| MA | 7 | 6 | 6 | 6 |
| MB | 11 | 2 | 10 | 2 |
| KA | 2 | 12 | 2 | 10 |
| LA | 9 | 3 | 9 | 3 |
| Total | 90 | 64 | 72 | 66 |
| percentage | 58.44 | 41.55 | 52.94 | 48.52 |

Table A6.10.2 Teacher-Peer nomination patterns for Drama. Sub-group

| Grades | Peer | | Teacher | |
|-------------------|-------------|-------------|--------------|--------------|
| | Boys | Girls | Boys | Girls |
| JA | 2 | 4 | 3 | 3 |
| JB | 4 | 2 | 3 | 3 |
| JC | 4 | 2 | 5 | 1 |
| JD | 5 | 1 | 5 | 1 |
| JE | 5 | 1 | 5 | 1 |
| JF | 2 | 4 | 3 | 3 |
| JG | 6 | 0 | 5 | 1 |
| JH | 4 | 2 | 3 | 3 |
| MA | 2 | 4 | 3 | 3 |
| MB | 4 | 2 | 4 | 2 |
| KA | 3 | 3 | 1 | 5 |
| LA | 4 | 2 | 5 | 2 |
| Total | 45 | 27 | 45 | 28 |
| percentage | 62.5 | 37.5 | 16.64 | 38.35 |

Table A6.10.3 Teacher-Peer nomination patterns for Mech-Tech Sub-group

| Grades | Peer | | Teacher | |
|-------------------|--------------|-----------|--------------|-------------|
| | Boys | Girls | Boys | Girls |
| JA | 9 | 0 | 9 | 0 |
| JB | 10 | 2 | 7 | 2 |
| JC | 7 | 2 | 8 | 1 |
| JD | 7 | 2 | 5 | 1 |
| JE | 8 | 2 | 8 | 0 |
| JF | 11 | 0 | 9 | 0 |
| JG | 13 | 0 | 9 | 0 |
| JH | 8 | 1 | 9 | 0 |
| MA | 7 | 2 | 8 | 1 |
| MB | 8 | 1 | 5 | 2 |
| KA | 5 | 4 | 4 | 2 |
| LA | 12 | 0 | 7 | 0 |
| Total | 105 | 16 | 88 | 9 |
| percentage | 86.77 | 13 | 90.72 | 9.78 |

Table A6.10.4 Teacher-Peer nomination patterns for Socio-Affec. Sub-group

| Grades | Peer | | Teacher | |
|-------------------|--------------|--------------|-----------|-----------|
| | Boys | Girls | Boys | Girls |
| JA | 7 | 2 | 5 | 4 |
| JB | 7 | 3 | 0 | 9 |
| JC | 4 | 7 | 4 | 5 |
| JD | 6 | 3 | 5 | 4 |
| JE | 7 | 3 | 3 | 6 |
| JF | 5 | 4 | 3 | 6 |
| JG | 5 | 5 | 5 | 4 |
| JH | 3 | 6 | 8 | 1 |
| MA | 1 | 8 | 2 | 7 |
| MB | 6 | 3 | 4 | 4 |
| KA | 3 | 6 | 1 | 8 |
| LA | 7 | 9 | 6 | 3 |
| Total | 61 | 59 | 46 | 61 |
| percentage | 50.83 | 49.16 | 43 | 57 |

Appendix 6.10

Form B Sub-group

Table A6.10.5 Teacher-Peer nomination patterns for Physical Sub-group

| Grades | Peer | | Teacher | |
|-------------------|--------------|--------------|--------------|--------------|
| | Boys | Girls | Boys | Girls |
| JA | 6 | 3 | 8 | 1 |
| JB | 6 | 4 | 5 | 2 |
| JC | 11 | 0 | 7 | 2 |
| JD | 8 | 1 | 9 | 0 |
| JE | 8 | 1 | 7 | 1 |
| JF | 7 | 5 | 3 | 3 |
| JG | 8 | 1 | 9 | 0 |
| JH | 9 | 1 | 4 | 5 |
| MA | 9 | 0 | 8 | 0 |
| MB | 9 | 1 | 9 | 0 |
| KA | 6 | 3 | 5 | 2 |
| LA | 9 | 0 | 9 | 0 |
| Total | 96 | 20 | 83 | 16 |
| percentage | 82.75 | 17.24 | 83.83 | 16.16 |

Table A6.10.6 Teacher-Peer nomination patterns for Music Sub-group

| Grades | Peer | | Teacher | |
|-------------------|--------------|--------------|--------------|-------------|
| | Boys | Girls | Boys | Girls |
| JA | 0 | 9 | 2 | 7 |
| JB | 2 | 7 | 2 | 7 |
| JC | 5 | 7 | 1 | 8 |
| JD | 3 | 6 | 2 | 7 |
| JE | 5 | 4 | 4 | 5 |
| JF | 0 | 9 | 1 | 8 |
| JG | 6 | 3 | 3 | 6 |
| JH | 2 | 7 | 7 | 2 |
| MA | 3 | 7 | 3 | 6 |
| MB | 2 | 7 | 3 | 5 |
| KA | 1 | 9 | 2 | 7 |
| LA | 8 | 2 | 6 | 3 |
| Total | 37 | 77 | 36 | 71 |
| percentage | 32.45 | 67.54 | 33.64 | 66.4 |

Table A6.10.7 Teacher-Peer nomination patterns for Visual Sub-group

| Grades | Peer | | Teacher | |
|-------------------|-----------|-----------|--------------|--------------|
| | Boys | Girls | Boys | Girls |
| JA | 6 | 0 | 3 | 3 |
| JB | 3 | 3 | 1 | 5 |
| JC | 2 | 4 | 4 | 2 |
| JD | 4 | 2 | 2 | 4 |
| JE | 5 | 2 | 4 | 2 |
| JF | 4 | 3 | 3 | 3 |
| JG | 4 | 1 | 2 | 5 |
| JH | 2 | 4 | 6 | 0 |
| MA | 5 | 1 | 5 | 1 |
| MB | 5 | 1 | 4 | 1 |
| KA | 1 | 5 | 1 | 5 |
| LA | 7 | 1 | 5 | 1 |
| Total | 48 | 27 | 40 | 32 |
| percentage | 64 | 36 | 55.55 | 44.44 |

Table A6.10.8 Teacher-Peer nomination patterns for Interpersonal Sub-group

| Grades | Peer | | Teacher | |
|-------------------|--------------|--------------|--------------|-------------|
| | Boys | Girls | Boys | Girls |
| JA | 8 | 6 | 4 | 8 |
| JB | 6 | 7 | 4 | 8 |
| JC | 4 | 8 | 5 | 7 |
| JD | 8 | 4 | 6 | 6 |
| JE | 7 | 5 | 7 | 5 |
| JF | 7 | 6 | 8 | 4 |
| JG | 9 | 3 | 9 | 3 |
| JH | 9 | 4 | 12 | 0 |
| MA | 3 | 9 | 3 | 9 |
| MB | 5 | 9 | 4 | 7 |
| KA | 2 | 10 | 2 | 9 |
| LA | 10 | 2 | 10 | 2 |
| Total | 78 | 73 | 74 | 68 |
| percentage | 51.65 | 48.34 | 52.11 | 47.9 |

Appendix 6.11 Averages of parents' ratings (for PIP forms) gained by the students in all the schools for each ability domain

Table A6.11.1 Averages of parents' ratings (for PIP forms) students in - School-Grade J4A

| Student Number | Parents Nominations | | | | |
|----------------|---------------------|-----------------|-----------------|---------------|----------------|
| | Intellectual - S1 A | Academic - S2 A | Creative - S3 A | Social - S4 A | Artistic - S5A |
| JA 1 | 3.14 | 3.18 | 3.2 | 3.12 | 3.1 |
| JA 6 | 2.95 | 2.59 | 2.8 | 3.12 | 2.9 |
| JA 8 | 3.59 | 3.53 | 3.7 | 3.65 | 3.6 |
| JA 11 | 3 | 3 | 3.1 | 2.88 | 2.9 |
| JA 12 | 3.18 | 3.06 | 3 | 3.15 | 2.8 |
| JA 13 | 2.95 | 2.94 | 3 | 2.69 | 2.9 |
| JA 14 | 2.95 | 2.76 | 2.8 | 3 | 2.9 |
| JA 16 | 3.32 | 3.06 | 3 | 1.88 | 2.9 |
| JA 17 | 2.32 | 2.24 | 2.5 | 2.54 | 2.4 |
| JA 18 | 3 | 2.59 | 2.6 | 2.81 | 2.4 |
| JA 20 | 3.68 | 3.35 | 3.5 | 3.46 | 3.4 |
| JA 21 | 3.45 | 3.29 | 3.2 | 3.35 | 3.2 |
| JA 22 | 3.14 | 3 | 3 | 3 | 3 |
| JA 23 | 2.91 | 3 | 3 | 2.96 | 2.9 |
| JA 25 | 3.14 | 3.41 | 3.3 | 2.69 | 3.4 |
| JA 26 | 3.14 | 3.41 | 3.3 | 2.69 | 3.4 |
| JA 29 | 2.64 | 2.35 | 2.7 | 2.73 | 2.6 |
| JA 30 | | 0 | 0 | 0 | 0 |
| JA 31 | 3.27 | 3.29 | 3.2 | 3.27 | 3.2 |
| JA 32 | 2.86 | 2.82 | 2.7 | 2.65 | 2.8 |
| JA 34 | 3.18 | 3 | 3.1 | 3.19 | 2.9 |
| JA 39 | 2.86 | 2.82 | 2.9 | 2.65 | 2.9 |
| JA 41 | 3.18 | 3.06 | 3.4 | 3.38 | 3.1 |
| JA 43 | 3.77 | 3.29 | 3.6 | 3.58 | 3.2 |
| JA 44 | 3.5 | 3.41 | 3.2 | 3.15 | 3.2 |
| JA 45 | 2.73 | 2.82 | 2.9 | 2.96 | 2.5 |
| JA49 | 3.91 | 4 | 4 | 3.96 | 4 |

Table A6.11.1 Averages of parents' ratings (for PIP forms) students in - School- Grade J4B

| Student Number | Parent Nominations | | | | |
|----------------|---------------------|-----------------|-----------------|---------------|----------------|
| | Intellectual - S1 A | Academic - S2 A | Creative - S3 A | Social - S4 A | Artistic - S5A |
| JB2 | 3.77 | 3.65 | 3.68 | 3.6 | 3.67 |
| JB3 | 2.82 | 3.06 | 3.16 | 2.9 | 3.11 |
| JB5 | 3.23 | 3.24 | 3.32 | 3.2 | 3.17 |
| JB7 | 2.32 | 2.29 | 2.44 | 2.3 | 2.22 |
| JB8 | 2.95 | 2.65 | 2.96 | 3.1 | 2.83 |
| JB9 | 3.05 | 3.06 | 3.2 | 3.3 | 2.94 |
| JB11 | 1.77 | 1.53 | 1.92 | 1.6 | 1.89 |
| JB12 | 2.19 | 1.94 | 2.04 | 2.3 | 2.22 |
| JB13 | 3.09 | 3.12 | 3.16 | 3.2 | 2.83 |
| JB14 | 3.27 | 3.29 | 3.4 | 3.5 | 3.06 |
| JB15 | 3.45 | 2.94 | 3.48 | 3.4 | 2.94 |
| JB16 | 3.05 | 2.71 | 2.76 | 3.3 | 2.56 |
| JB17 | 3.77 | 3.47 | 3.16 | 3.1 | 3.22 |
| JB20 | 2.68 | 2.82 | 3.08 | 3.1 | 2.89 |
| JB21 | 2.95 | 3 | 3.04 | 3 | 2.89 |
| JB23 | 3.18 | 3.18 | 3.2 | 3 | 3.22 |
| JB24 | 2.86 | 3.18 | 2.84 | 2.7 | 2.83 |
| JB25 | 2.68 | 2.59 | 2.88 | 2.5 | 2.56 |
| JB28 | 3.41 | 3.18 | 3.2 | 3.5 | 3.28 |
| JB29 | 3.36 | 3.41 | 3.32 | 3 | 3.22 |
| JB30 | 3 | 3.12 | 2.84 | 2.9 | 2.83 |
| JB31 | 2.86 | 2.76 | 3.08 | 2.8 | 3 |
| JB33 | 3.09 | 3.06 | 3.04 | 2.9 | 3.17 |
| JB35 | 3.77 | 3.59 | 3.72 | 3.8 | 3.61 |
| JB36 | 3.55 | 3.53 | 3.64 | 3.7 | 3.5 |
| JB37 | 3.68 | 3.29 | 3.48 | 3.5 | 3.22 |
| JB38 | 2.14 | 2.12 | 2.36 | 2.3 | 2.5 |
| JB40 | 3.05 | 3.18 | 3 | 3 | 3.06 |
| JB43 | 3.41 | 3.47 | 3.4 | 3.5 | 3.33 |
| JB44 | 3.27 | 3.12 | 3.16 | 2.9 | 3 |
| JB45 | 2.91 | 2.94 | 3 | 3.1 | 2.83 |

Appendix 6.12 Triangulation of Data

| Grades | Gender- B- Boys G- Girls | Students selected by achievement test marks | Students selected by RSPM marks | Students selected by PTSNs | Students selected by Parents nominations | Teacher nominations |
|--------|--------------------------------|---|------------------------------------|-------------------------------|--|------------------------|
| JA2 | B | | * | | | |
| JA8 | B | | | | * | |
| JA 9 | B | * | * | * | | * |
| JA 11 | B | * | * | | | |
| JA12 | B | | * | | | |
| JA14 | B | | * | | | |
| JA15 | B | | | * | | |
| JA16 | B | * | | | | |
| JA17 | B | * | | | | |
| JA20 | B | | | * | * | |
| JA21 | B | | | | * | |
| JA22 | B | | * | * | | |
| JA 25 | B | * | * | | | |
| JA 30 | G | * | | | | * |
| JA33 | G | | *intervention | | | |
| JA35 | G | | *intervention | | | |
| JA 36 | G | * | | | | * |
| JA37 | G | * | | | | |
| JA 38 | G | * | | | | |
| JA 39 | G | * | | | | |
| JA 43 | G | * | | * | * | * |
| JA44 | G | * | | | * | |
| JA46 | G | | * | | | * |
| JA49 | G | * | | | * | |
| JB2 | B | | | * | * | |
| JB3 | B | | * | | | |
| JB4 | B | | *intervention | | | |

| Grades..... | G- Girls; Gender- B- Boys | | Students selected by achievement test mark | Students selected by RSPM marks | Students selected by PTSN | Students selected by Parents nomination | Teacher nomination |
|-------------|---------------------------|---|--|---------------------------------|---------------------------|---|--------------------|
| | | | | | | | |
| JB5 | B | | | * | * | | |
| JB7 | B | | *intervention | | | | |
| JB8 | B | | *intervention | | | | |
| JB9 | B | | *intervention | | | | |
| JB13 | B | | | | | * | |
| JB15 | B | | | | * | | |
| JB17 | B | | *intervention | | * | | |
| JB26 | B | * | | * | | * | |
| JB29 | G | * | | | * | | |
| JB32 | G | | * | | | | |
| JB34 | G | | | * | | | |
| JB35 | G | | | * | * | * | |
| JB36 | G | * | * | * | * | * | |
| JB37 | G | | | | * | | |
| JB38 | G | | *intervention | | | | |
| JB40 | G | * | | | | | |
| JB41 | G | * | * | * | | * | |
| JB43 | G | | * | | * | | |
| JB45 | G | | *intervention | | | * | |
| JC1 | B | | | | | * | |
| JC2 | B | | * | | | | |
| JC7 | B | | | | * | * | |
| JC19 | B | * | | * | | * | |
| JC20 | B | | | | * | | |
| JC21 | B | | | | * | | |
| JC24 | B | * | | | | | |

| Grades..... | G- Girls | Gender- B- Boys | Students selected by achievement test mark | Students selected by RSPW marks | Students selected by PTSN: | Students selected by Parents nomination | Teacher nomination |
|-------------|----------|-----------------|--|---------------------------------|----------------------------|---|--------------------|
| JC27 | B | | * | | | | |
| JC28 | G | * | | * | * | * | |
| JC31 | G | * | * | * | * | * | |
| JC35 | | | * | | | | |
| JC36 | G | | * | | * | | |
| JC38 | G | | * | | * | | |
| JC44 | G | | | | | | * |
| JD1 | B | | * | | | | |
| JD3 | B | | * | * | | | |
| JD7 | B | | | | * | | |
| JD9 | B | * | * | * | | * | |
| JD10 | B | | * | * | | * | |
| JD11 | B | | * | | | | |
| JD14 | B | | | | | | * |
| JD20 | B | | | | * | | |
| JD21 | B | | * | | * | | |
| JD31 | G | | | | * | | |
| JD33 | G | * | * | | | | |
| JD34 | | * | | | | | |
| JD36 | G | * | * | * | * | * | |
| JD38 | G | | | | * | | |
| JD46 | G | * | * | | | | |
| JE11 | B | * | | * | * | * | |
| JE16 | B | * | | | | | |
| JE17 | B | * | * | * | * | | |

| Grades..... | G- Girls B- Boys | Students selected by achievement test mark | Students selected by RSPW marks | Students selected by PTSN: | Students selected by Parents nomination | Teacher nomination |
|-------------|---------------------|---|------------------------------------|----------------------------|--|--------------------|
| JE20 | B | | | | * | |
| JE22 | B | | | * | | * |
| JE23 | B | | | | * | |
| JE24 | B | * | | | | |
| JE26 | B | | * | | | |
| JE27 | B | * | | | * | * |
| JE30 | G | * | * | * | | * |
| JE32 | G | * | | * | | * |
| JE34 | G | * | | | * | |
| JE40 | G | | | | * | |
| JE41 | G | | | | * | |
| JE42 | G | | | | | * |
| JE45 | G | | * | | | |
| JE47 | G | | | | | * |
| JE48 | G | | | | | * |
| JF1 | B | | * | | | * |
| JF3 | B | | * | | | |
| JF7 | B | | | * | | |
| JF8 | B | | * | | | |
| JF11 | B | | | | * | * |
| JF14 | B | | * | * | | |
| JF15 | B | | | * | | * |
| JF17 | B | | | | * | |
| JF20 | B | | | | * | |
| JF21 | B | | * | * | | |
| JF24 | B | * | | | | |

| Grades | G- Girls | Gender- B- Boys | Students selected by achievement test mark | Students selected by RSPW marks | Students selected by PTSN: | Students selected by Parents nomination | Teacher nomination |
|--------------|----------|-----------------|--|---------------------------------|----------------------------|---|--------------------|
| JF26 | G | | * | * | * | | * |
| JF27 | G | | * | | * | * | * |
| JF30 | G | | | * | | | |
| JF33 | G | | * | | | | |
| JF34 | G | | | | | * | |
| JF40 | G | | | | | * | |
| JF41 | G | | | | | * | |
| JF42 | G | | | | | | * |
| JG1 | B | | * | | | | |
| JG2 | B | | * | | * | | * |
| JG7 | B | | | | | | * |
| JG8 | B | | | | * | | |
| JG10 | B | | | | | * | |
| JG12 | B | | | | | * | |
| JG15 | B | | * | | * | | * |
| JG17 | B | | | * | | | * |
| JG19 | B | | | | | | |
| JG20 | B | | | | | * | |
| JG25 | B | | * | | * | | * |
| JG30 | G | | | | | * | * |
| JG35 | G | | | | | * | |
| JG38 | G | | * | | | | * |
| JG44 | G | | | | | * | |
| JG45 | G | | | | | * | |
| JH1 | B | | 8 | | | * | * |
| JH2 | B | | | | * | | |

| Grades..... | G- Girls; Gender- B- Boys | Students selected by achievement test mark | Students selected by RSPM marks | Students selected by PTSN | Students selected by Parents nomination | Teacher nomination |
|-------------|---------------------------|--|---------------------------------|---------------------------|---|--------------------|
| JH3 | B | | | | * | |
| JH4 | B | | | | * | |
| JH6 | B | | | | * | * |
| JH8 | B | | | | * | |
| JH9 | B | | | | | * |
| JH10 | B | * | | * | * | * |
| JH12 | B | * | | | | |
| JH16 | B | * | | | | |
| JH19 | B | | | | * | |
| JH25 | B | | | | | * |
| JH26 | G | * | | * | | * |
| JH27 | G | * | * | * | | * |
| JH28 | G | * | * | | | * |
| JH34 | G | | | | | * |
| JH38 | G | * | * | | | |
| JH39 | G | * | | | | |
| JH40 | G | * | | * | | |
| JH41 | G | | * | | * | |
| MA2 | B | * | | * | | * |
| MA6 | B | * | | * | | * |
| MA9 | B | | * | | | |
| MA10 | B | | | * | | * |
| MA14 | B | | | * | | |
| MA15 | B | | *intervention | | * | |
| MA16 | B | | | * | | |

| Grades..... | G- Girls B- Boys | Students selected by achievement test mark | Students selected by RSPW marks | Students selected by PTSN: | Students selected by Parents nomination | Teacher nomination |
|-------------|---------------------|---|------------------------------------|----------------------------|--|--------------------|
| MA19 | B | | | | * | |
| MA25 | G | | | | | * |
| MA26 | G | * | | * | * | * |
| MA29 | G | * | *intervention | | * | * |
| MA33 | G | | | * | | * |
| MA34 | G | * | | | * | |
| MB2 | B | | | * | * | * |
| MB11 | B | * | | * | | * |
| MB12 | B | * | * | | * | * |
| MB21 | B | * | * | * | | * |
| MB23 | B | | * | | | |
| MB27 | G | | | * | * | * |
| MB28 | G | | *intervention | | | |
| MB32 | G | | | | * | |
| MB34 | G | | *intervention | | * | |
| KA1 | B | | *intervention | | | |
| KA2 | B | | *intervention | | | |
| KA4 | B | | *intervention | * | * | * |
| KA5 | B | | *intervention | | | |
| KA8 | B | | | | * | |
| KA11 | G | | | | * | |
| KA12 | G | | *intervention | | * | |
| KA13 | G | | * | | * | |
| KA14 | G | | | | * | |
| KA15 | G | * | * | * | * | * |
| KA18 | G | * | *intervention | * | * | |

| Grades..... | G- Girls Gender- B- Boys | Students selected by achievement test mark | Students selected by RSPM marks | Students selected by PTSN: | Students selected by Parents nomination | Teacher nomination |
|-------------|-----------------------------|---|------------------------------------|----------------------------|--|--------------------|
| KA20 | G | * | | * | * | * |
| KA22 | G | | *intervention | | | |
| LA3 | B | | | * | | |
| LA4 | B | | | | * | |
| LA5 | B | | | | * | |
| LA6 | B | * | | | | * |
| LA7 | B | | | * | * | * |
| LA8 | B | | *intervention | * | * | |
| LA9* | B | * | * | * | * | * |
| LA10 | B | | | | | * |
| LA12 | B | | | * | | |
| LA18 | G | * | *intervention | | | * |
| LA20 | G | | *intervention | * | | * |
| LA21* | G | | * | | | * |