Section 4

Strategy Development

Chapter 10

Practising a New Approach

Chapter Introduction

While school systems are paying lip service to the practice of teaching thinking, and therefore cognition, most are working between two competing models. The innate model of cognition has held so much credence for so long that the entire community is thoroughly convinced that it is fact that cognitive skills cannot be taught. de Bono is one of a number who have gained the vision of cognitive development possibilities. In order to be effective in developing cognition, a totally new model must be accepted. That is a model of environmentally influenced cognitive development. This concept is based on the understanding that language is the major vehicle of cognitive development. The motivating factor of cognitive development is bonding and the teaching tool for cognitive development is the process of modelling. Cognitive development is a process that each student should be taught as a conscious model of understanding to practise "meta-cognition". The practice of metacognition then produces effective networks of critical thinking pathways. The knowledge of cognition will assist students to become more directed and capable of self education rather than being force-fed information. Thus, teaching needs to change its emphasis from information dissemination to greater emphasis on cognitive development, merely using information as a vehicle for practising thinking.

Commonly held view is that development between birth and 5 years occurs naturally

It is commonly accepted by most people in our society that children go through infancy and then, once a particular degree of maturity has been attained, usually around 5 years of age, that education is then pursued. It is assumed that what happens between birth and 5 years of age occurs naturally. If each individual possessed a set of cognitive skills within, and it was just a matter of waiting for these to emerge and mature, one could assume that development could occur naturally. This approach of subscribing to naturally occurring development has been given the chance to succeed for a great number of years. To the educationalists' dismay, many children present themselves to the education system with a great variation of developmental attainment. In the first instance, educationalists have believed that what we have genetically acquired is what we have to work with and therefore one cannot expect more of an individual than what the individual already displays in terms of ability.

From birth children develop very different cognitive skills depending upon their languaging skills and other social

Metacognition has made people aware that it is possible to improve cognitive functions. (Halpern, 1989, p31 - 34: de Bono, 1991, Biggs, 1987, p143) This has caused researchers to either partially, or in my case almost totally, accept the concept that cognitive development is a social curriculum

environment

rather than a totally genetic one. This belief is supported by the improvement in cognition that has been achieved by de Bono's CoRT program in Venezuela and the improvement of students I have personally experienced in providing individuals with the concept of critical thinking pathways. (Halpern, 1989, p9) The work of Dr Singh and Michael Ahrens in the Department of Health in New Zealand over a twelve year period demonstrated that childhood development depended upon environmental experiences that in turn developed critical cognitive pathways of thinking that then enables children to obtain efficiency in social functioning. (Ahrens, 1992–93, p7) My reading about the life of Helen Keller reveals that without languaging there is a very limited sensory input that is possible and very little functional cognition able to occur. Helen Keller describes her early life, before remediation, as being "like a ship sailing through a fog". (Keller, 1905,) After a languaging system was established cognitive development was made possible so that Helen Keller eventually became a notable academic even though she was blind and deaf. The life of Helen Keller exhibited strong reasons to believe that language is the base for cognition and that cognition is developed through social interaction with the environment and that it is possible for individuals growing up in their environment to miss out, either totally or partially, specific cognitive functions that society demands of its participants. As well, I have the evidence of the clients I have remediated at my Hornsby Centre. The nature of the work that I do has allowed me to observe the family lives of over 400 clients. I have seen many people, of all age groups, who have suffered cognitive deficits as a result of inadequate languaging skills. Their disabilities have been far less than those of Helen Keller yet the disabilities have been very real and serious. I have also discovered that the change in technology has had a significant influence in causing a decline in the level of languaging development depending upon the exposure to technology such as television, computers and video. In rectifying the language deficit, as a prerequisite to any other improvement program, I have found that the deficit cognitive skills are able to be enhanced quickly and efficiently. This is discussed in more depth in the section "Learning and the Nervous System" which follows in this thesis.

Parents need to know the importance of an educational curriculum from birth

There is academic argument about whether cognitive skills develop as a result of language or vice versa. I hold the first of these alternative opinions (Sroufe et al, 1992) due to the success I have experienced in dealing with language deficits before remediating cognitive skills. So convinced of this am I

The orphanage.

The crowded conditions of beds to show that there is minimum human contact.

Figure 5

Figure 5

An orphanage worker in the laundry.

This gentleman in the middle is one of the aide workers in Romainia.

Figure 5

that cognition is developed through language and social interaction that I believe that each parent needs to understand the importance of setting a languaging curriculum from birth. Education starts at home from birth.

Bonding

At birth the human brain has limited activity and few dendritic connections

I believe bonding is the very base of "kick starting" the cognitive process. It is in the initial bonded relationship at birth with mother and child that the initial dendritic[33] growth occurs rapidly within the brain. It is through touch, the sound of mother's voice and probably many other tactile stimuli that cannot all be accounted for that this dendritic growth efficiently occurs. This is the first stage in languaging to the child providing a very secure base for further languaging and modelling encounters. (Dr Gluzgrugh, Neurologist, University of Alabama, USA, 1995, "Sunday" Channel 9, Sydney, 28 May, 1995[34]) This knowledge is now causing obstetric specialists and paediatricians to ensure that all babies, whether born normally or premature, receive the tactile and emotional experience needed for this initial development to occur.

Bonding raises adrenaline level thus leading to high levels of neurotransmitter secretions and thus to learning

Bonding needs to be understood by parents and teachers in order to practise the new approach that I am suggesting. Bonding, I believe, is nature's way of facilitating the learning process. It is the emotional bond which raises adrenalin levels thus providing more energy to the nervous system causing it to produce a high level of neurotransmitter secretions in the synaptic region. The initial adrenaline secretion provides motivation towards the task. The continued relationship then causes endorphins to be secreted thus providing low level stimulus but pleasurable environment for learning. This causes a higher level of neuronal sensitivity placing the child in a much better learning mode. With heightened sensitivity children learn at a much faster rate thus the baby is able to make enormous strides in learning if in a good bonded environment.

Children need adult human caring involvement to develop

It is well known that children either develop inadequately or not at all in a poorly bonded environment. This is an

33 The physiology of some important aspects of the human brain is outlined in chapter 14, Learning and the Nervous System.

34 The appendix includes a videotape of this program.

observation that has been made over many years from the thirteenth century when Frederick II conducted experiments with babies to cases such as Spitz' observation in 1945 where it was noticed that orphaned infants raised in sterile situations, with little adult human involvement, became apathetic, unresponsive and withdrawn. Recent follow up studies of children separated from parents from age four years show long term negative outcomes. (Rutter, 1988 and Smirnova, 1990 in Sroufe et al, 1992, pp 44–45)

to social expectations

The Romanian orphanage where aid workers came to help, 1989

Beds for the older children, note cramming of beds and soiled sheets, soon after arrival of aid workers, Christmas, 1989.

Cots for younger children, note cramming of cots and number of occupants per cot, soon after arrival of aid workers.

The laundry with Romanian woman worker, 1990

Lewis Romney (administrator of aid workers) with Romanian orphans, sometime in 1990 - 91

Figure 5 Pictures of Romanian Orphanage

Adrian, a young boy in a Romanian orphanage, was brought into an Aid Care Centre. It was assumed by the medical workers that this boy was 18 months old. In referring to his records they found that he was 5 years old. He had to be held like a new born baby and was not able to speak but merely made noises. It was not until the aid workers provided a bonded and loving environment for that child did he begin to develop. However, since he was not able to develop some of the essential dendritic growth at birth it appears that his speech and ability to walk are most likely to be impaired for life. (Anne Cook, Medical Aid worker, Christchurch New Zealand, 3rd November 1995)

The example of Adrian who was thought to be 18 months when in fact five years old

Urie Broffenbrenner emphasises that no human being should be studied outside context as context or outside influences have a great deal more to do with development than psychologists have first thought. He suggests that while the child brings neurological characteristics to the learning environment the biological influence only provides a

Bonding is important

potential for the way a child will develop. The actual environment is more decisive in terms of actual outcomes. Broffenbrenner believes the context of the immediate environment then socio economic influence and finally cultural modelling are very influential factors in child development. (Sroufe et al, 1992, p47) This view implies that there is a strong possibility for bonding being a very important aspect of the child's development within "Immediate environmental" influence as described by Broffenbrenner. According to Dr Allan Collins (Episodes 1 & 2, Child Development, Open University, ABC Television, Australia, 1995) the perception of bonding is stereotyped around the concept of breaking bonds so that the child can become an individual. In his view, breaking bonds is not what the major focus of bonding should be. The major focus needs to be on transition in the bonded relationship so that the child can become an individual. He maintains that there is no need for separation but there is a need for a changed relationship.

The absence of bonding forces children to determine their opinions on the basis of immature pathways of thinking

From my own observation and through following case studies at my centre, It has been my observation that bonding is a major tool related to learning especially childhood learning. Some of my observations have led me to the conclusion that children from families where the parents distance themselves, there is a greater likelihood that the child will avoid bonding with other adults. A number of parents proudly tell me that their child is an individual and looks after itself, and the child knows what it wants. This appears in some parents' minds to be equated with brilliance. What those parents do not understand is that there is a marked distinction between the child knowing what (s)he wants and what (s)he needs. For example, a child may not want to study but may need to. Self determination within the context of immaturity, in my view, will lead the child to model immature and deficient pathways of thinking that will lead to an individual having the potential to remain immature over a longer period of life than is necessary. By immature I mean that an individual is coming from the position of emotion rather than from the position of past experience in knowing the distinction between needs and wants. A child who becomes self-opinionated and lacks preparedness to learn from others reduces their potential for obtaining mature adult models of thinking. Thus, parents distancing themselves from their children lose the advantage of effective modelling to their children and frequently bemoan the waywardness of their children's behaviour as

they progress in age.

Bonding requires atmosphere of patience, empathy and a belief in the self-worth

Dr Arnold Sameroff claims that if a child has a problem, the parents are most likely to have a similar problem also. In his experience, relationships form a very important venue for learning cognitive skills. (Episode 2, Child Development, Open University, ABC Television, Australia, 1995) In order to bond with someone the person or adult must personally and genuinely be interested in the person with whom they are bonding. There must be an atmosphere of patience, empathy and demonstration of one's belief in the self-worth of the other person.

Modelling

Modelling is much more important than most parents realise

Dr Sroufe says modelling is responsible for passing characteristics from one generation to the next. Modelling is a process where an individual who is significant in a person's life demonstrates behavioural characteristics through their actions and attitudes. (Broffenbrenner, Episodes 1 &2, Child Development, Open University, ABC Television, Australia, 1995) The modelling process is a much more important process to the development of children than many parents realise.

The tragedy of assuming that learning in infancy is natural, automatic, adecuate and more or less uniform from child to child

A great many parents assume that the things children learn in their infancy before going to school are learned naturally, automatically, adequately and more or less uniformly from child to child. Where performance variations occur from one child to the next, it is the level of innate ability that is judged to create the difference. Therefore, a person who displays difficulty in reading performance levels is deemed to possess less ability. The tragedy for those who subscribe to this belief is that parents in particular, and the community in general, believe that some people are born with extensive capacities while others only have the capacity to achieve at a much lower level of performance. That belief is both a communal and personal tragedy. Feminists commonly apply the term "glass ceiling" to the barriers preventing women from attaining positions of influence and power due to culturally imposed social barriers. The same term can be used to describe the barriers placed on each and every person caused by the belief that their skills have an upper limit which is determined by the genetic make-up of his/her mind.

Most families model cognitive skills but

The multitude of parents who leave the development of cognitive skills to the "natural" process interact with their

children in the normal course of family life, often modelling cognitive skills but doing so in a haphazard way which fails to ensure that all desirable skills are adequately modelled. Parents neglect systematic and complete modelling of cognitive skills believing some or all of the following:

haphazardly, failing to ensure that all desirable skills are adequately modelled

- No need for children to learn these skills at an early age. OR
- Children will develop appropriate skills "to the limit of that child's ability" by the mere effluxion of time. OR
- Children will learn them at school.

Such parents are almost certainly unaware of the physiological changes that occur in the brain from the first hours of life. Harry Chugani, in his PET scanning investigation of newborn children, illustrates the concept that there is little function of the mind in regards to social cognitive processes in the newly born. His research demonstrated that a newborn child exhibits glucose utilisation, an indicator of cognitive function[35], primarily within the brain stem or what is known as the primitive brain. These functions are primarily related to autonomic functions that cater for the child's survival. (Episodes 1, 2 Child Development, Open University, ABC Television) Dr Robert Cooper illustrates the point by quoting examples of a child gagging when it has the possibility of choking, only minutes after birth.

PET scanning shows very limited cognitive activity in the new born child

Dr Sameroff emphasises that genetics only provide potentials for development. (Episode 2, Child Development, Open University, ABC Television, Australia, 1995) He also stresses that the modelling of a child's environment is what finally determines the outcomes of the child's development and this is enhanced by the parent's educational status and also by the economic status that enables the parent, or a long-term primary carer, to have maximum participation with the child. This provides us with evidence that modelling from a significant adult in the child's life, is an extremely important aspect of that child's development.

Modelling from a significant adult in the child's life is an extremely important aspect of that child's development

Ongoing development requires the strategic assistance and modelling of an adult as is evidenced in the case of Adrian,

Evidence that adult modelling is essential for "normal"

35 For more detail about glucose utilisation as an indicator of cognitive processes see Learning and the Nervous System.

development

the Romanian orphan referred to earlier in this chapter. His case highlights the fact that, without adult modelling, a child of 5 years of age can still remain at the developmental stage of an 18 month child.(Interview with Anne Cook, Aid worker, Christchurch New Zealand, reported in "The Christchurch Press", 3rd November, 1995). Further evidence of the need for a child to be in communication with the outside world to model cognitive function is given in Episode 4 of Child Development where it says that if any of the senses are impaired there are delays and inhibitions to the development of a child's cognition. The example used here was the necessity for testing hearing of new born babies to avert the possibility of significant cognitive developmental delays and inhibitions. (Episode 4, Child Development, Open University, ABC Television, 1995) Dr Marian Sigman (Episode 5, Child Development, Open University, ABC Television, 1995) in a twelve year study found that poor sleepers were less competent in learning throughout their life. This, she indicates, is due to the impairment of the child's senses to be able to interact with its environment. This clearly indicates the essential nature of a child's modelling of the outside environment and also emphasises the importance of the modelling process in a child's development.

Aristotle's view, though made without sound scientific research, still has a place in today's world

Another matter deserves mention here. By taking the view that cognitive development in children occurs without the need for parental or adult intervention parents are dismissing a dictum of Aristotle. He said "the "**soul** of a child is like a clean slate on which nothing is written, on it you may write what you will".[36]. Clearly Aristotle saw the need for adult intervention in the development of children. He made his statement without the benefit of PET scanning and his pronouncements lack the scientific basis that is required of today's scholars yet his statement is largely true. In fact, Aristotle's statement gives the degree of detail that very many people consider perfectly adequate.

Old beliefs, derived from observations, should not be completely ignored without good reason

It is my contention that Aristotle's statement is disregarded now largely because our society believes cognitive skills develop in a way that is controlled by genetics in accordance with the generally held theory loading which our society embraces, the theory of evolution. Here is a case where society would benefit by considering, and using where appropriate, all points of view even when other theories seem

36 Often misquoted as "The mind of a child ..."

more compelling.

Modern life gives parents less time to model cognitive functions so modelling must be planned more than ever before

Since modelling is such a serious part of a child's developmental program, it is necessary for parents of the 1990s and beyond to understand that they have an additional task they must fulfil consciously. A task that has, up to recent times, been considered a part of a child's natural and automatic development. This task is the process of modelling to the child social concepts, beliefs and the processes of cognitive function or thinking. It is now necessary through the influence of technology and resulting economic framework of our society for the extended family to be scattered and for both partners to work. As a result, children do not have as much time to interact with the carers and they spend much more time with children of their own age. In a bygone age when a parent had extended time to interact with the children, the modelling curriculum did not have to be planned and studied as precisely as is necessary today. Nowadays, parents do not have enough time on their hands. This lack of time is often self imposed through distractions of life such as the entertainment media and self imposed work commitments. As a result, parents need to focus on providing quality modelling in the reduced time that they have with their children.

Better for the child to have considered moral and other problems before facing a real life dilemma

In the extended family of yesteryear, in a low technological society, families talked more frequently and shared methods of thinking, philosophies and community expectations. Since time is no longer on our side, the modern parent needs to consciously teach thinking skills. They must also purposefully set an agenda to raise social and family issues even if they do not directly feel that they apply to their child at the time. In our society today, many parents are unaware of what their children are being exposed to and may not know when specific issues become relevant. However, being forewarned is being forearmed.

Belsky says Japanese children are taught dependence and interdependence and that they become more effective and independent adults than Americans

Dr Jay Belsky compared Japanese and American social attitudes in the modelling processes they carry out in the development of their children. Japanese parents tend to teach their children dependence and develop strong concepts of interdependence so that they learn to co-operate with their society for survival. American parents teach their children to be independent of others and to stand up and fight. Thus American children are expected to do things alone as American parents believe that success depends largely on innate ability where the Japanese child is encouraged to do things together in community as Japanese

believe that success is seen in terms of practise and effort. (Stevenson and Lee, 1990, in Sroufe et al, 1992, p70) This results in the Japanese mother and father spending a great deal of time working with their children and assisting them in the learning processes at school. The American parent, on the other hand, will banish their children into isolation in order to carry out their homework and school learning. By doing this the American parents believe they are developing independence. The irony of the two child training methods is that the parents who have more contact with their children modelling social expectations and cognitive processes are going to be those children who, in adulthood are more independent in that they have well developed cognitive skills producing a high level of self esteem due to a capacity to perform in society. The parents spending less time with their children endeavouring to develop independence deprive the child of the modelled expectations that the parents expect them to develop thus a child who has poorly developed cognitive skills develops bravado and ego to maintain self esteem even though the emerging adult may not be coping as well with his/her environment.

Japanese and American approaches to modelling the development of children can both lead to a high proportion of suicides

In both the American and Japanese approaches to modelling the development of their children, for different reasons, the extremes of each approach cause a high percentage of teenagers to suicide. In the Japanese culture the extreme parent who, in the bonded modelling relationship, pushes the child beyond its emotional resilience thus giving it no way out other than to seek death or to run away from home and live on the streets. The American parents who back away from their modelling responsibilities in the bid to make their child ultra independent force the child to despair when not able to cope with the environment for which they have not been prepared. Thus the children turn to each other for social solutions. These solutions are very often immaturely evolved, often leading the child into serious trouble. The parents then turn against the child in anger for disgracing them. Thus, by teenage years, many have come to their emotional limit feeling totally isolated from those they love. Suicide is then "the easy way out".

Children need bonded modelling and scaffolding

Neither the American nor the Japanese approach is necessarily what is needed although many families within each society do follow a course of action that is a combination between the two approaches. What is needed is a close bonded modelling of social cognitive skills in the first instance scaffolding the child while it is not able to carry out the complete skill. Scaffolding is a process in which a

person supports a procedural activity carried out by a learner by modelling the steps within a process that the learner finds difficult. As the learner gains experience and gradually begins to cope with those steps, the one scaffolding lets go and allows the learner to stand alone in repetition to re-enforce the entire process. Dr Kirt Fisher states that the scaffolding process allows the individual to more quickly perform at a higher level of activity than the individual could do by themselves. This is a process, she says, that is needed to help children advance. (Episode 2, Child Development, Open University, ABC Television, 1995) The process of scaffolding in modelling social cognitive skills inherently embodies both the Japanese and the American approaches in appropriate balance. The bonded modelling provides the developing child with a sense of security and the freedom to practise newly perfected skills, provides for the development of self-esteem.

Obedzinski's vision of a happy American family

Dr John Obedzinski (behavioural paediatrician Cort Madeira California, Professor of Behavioural Paediatrics, University of California, San Francisco) verifies the popular American independence model as being, in its extreme, basically a failure. He outlines the characteristics of a happy American family. A happy family is not a democracy but a benevolent authority where the parents model final decisions. Parents become involved in understanding children's thinking and languaging instead of standing aloof and passing the difference off as "children will be children". Parents recognise that modelling appropriate social thinking and practices will not always meet with the approval of the child. Happy families close ranks when faced with major disasters and the parents will model problem solving techniques and strategy development. They will see problems as challenges. Parents are always available to share and model experiences. Happy families value tradition that has been modelled to them by their parents. They are able to make mistakes and forgive. They are able to be angry without destroying one another. Children are modelled successful work ethics. They are able to compete and are modelled the attitudes of both winning and losing. Inherent in Dr Obedzinski's observations is, I believe, the modelling of acceptance of the differing views and attitudes taken within the family.

I would add a corporate philosophy of life

In addition I believe that a happy family develops a corporate philosophy of life so that the entire family is aimed in the one direction.

There is a need for a

While modelling must start with the family, the school

better mix of male and female teachers

system needs to understand the importance of a bonded modelling environment. Dr Peter West, Senior Lecturer in Education, University of Western Sydney, Nepean who is completing a paper on boys and school is quoted in the Sydney Morning Herald as saying "The proportion of men going into teaching has fallen from 34% to 27% which is causing many of the schools to become "feminised" ... We need to rethink classroom approaches ... Boys want strong confident males to relate to. ... We have to bring fathers back into education. Don Edgar and Helen Glezer, in the same newspaper article, say "We have missed half the influence that parents have on children because we have ignored the role of fathers." Dr West is emphasising the importance that modelling has in the success of young people. He states that boys from high status suburbs do better at the HSC partly because their mothers and fathers model to them the importance of study for maintaining their future lifestyle. However, while Dr West's issue is with the deficiencies experienced in the system at the moment his research provides some insight on the fact that the abundance of female teachers is making a difference to the success that girls are experiencing.

Teachers are seldom aware that modelling is needed and when they are they usually assume students have the more basic skills

Due to the pace of school life and sometimes being unaware of the importance of modelling, the information focused teacher, driven by an over full curriculum, frequently omits to adequately model the skills to all students according to his/her need. Cognitive skills need to be clearly and consciously modelled to students so that they are able to cope with the work set. Students need to understand the strategies, thinking and application skills that are necessary for complete integration between the brain and the bodies output mechanisms. A strategy can include processes that are involved with the social expectations of quality control such as layout and presentation. In this example, the procedural process relies on critical cognitive pathways such as judgement. Judgement is an ability to observe the personal product and transfer the knowledge of essential features and boundary limitations embodied in an example to a personal presentation design. Judgement itself relies upon rule induction which is an ability to observe a pattern and recognise it's elements in another application. Logic and sequence are also essential to know what order the steps for the process must be in order to obtain a desired result. Then being able to judge the outcome for each step so that one knows when to proceed to the next. This example as incomplete as it is, demonstrates the complex cognitive processes that are neglected by many teachers, who are

unaware of the complexity of modelling, when administering information for the learning process. This is the essence of motor integration, a skill hardly known or understood, in our present society.

In today's busy economic climate children often fall into a state of anxiety because of inadequate bonding, modelling and scaffolding

In a busy economic climate, it is so easy to become frustrated with our children when we ask them to do things and they do not seem to be able to do what we ask. We forget that the skills we ask them to perform must first be subjected to a bonded modelling routine first. The bonding is to raise motivation levels and the modelling is to maintain the motivation levels through scaffolding while a new task is being internalised and being converted from academic information to practical application and knowledge. Frequently parents place demands on children for skills that are only partially or inadequately modelled. This scenario easily happens in a busy society where parents become pushed for time and without modelling the tasks expect children to fill the time void by carrying out those needed tasks. In this way, parents in their anxious state, transfer their anxiety to their children which lowers motivation to learn but at the same time parents expect peak performance. When the product does not materialise to the parents specifications, the child is harangued for being stupid lazy and failing to take responsibility. Before our age of technology and modern efficiency, these problems did not emerge as frequently because children were given regular home duties. Thus, children became more practised at usual family routine. Parents in a calm atmosphere had time to model the activities.

Progamming Cognitive Networks in the Brain

Modelling leads to clear precise, critical cognitive networks, examples in dealing with drugs and anxiety

Modelling leads to clear precise, critical cognitive networks in the brain. It is common for both teachers and parents to know what they want to teach children as they are growing up but very few are aware of how such teaching takes place. Providing the child with information about what you wish them to know does not help the child apply the principles to his/her life. For example, many parents admonish their children against being influenced towards drugs. However, very few parents have the presence of mind to provide the child with clear critical pathways of thinking that provide the child with a tool to know how to handle a peer relationship

where drug issues arise. Many a young person has become involved in drugs against their will for the reason that they had inadequate cognitive preparation in being able to withstand the extreme pressures of a peer group. Another illustration of the need for critical cognitive pathway development in the brain is illustrated by experimentation carried out in Sydney University's Anxiety Disorders Clinic. Dr Ross Menzies, director of the Clinic, is reported to have said that it was normal to worry about serious problems in life. Chronic worriers, however, worry constantly about many small issues. The normal treatment, said Dr Menzies, is a process of challenging one's negative thoughts. However the new process that the Clinic has developed prevents negative thoughts from entering the mind in the first place. This process is called "Attentional Control Therapy". Dr Menzies states that this therapy involves worriers being taught a set of simple mental exercises that help them concentrate. These critical pathways developed by the mental exercises directly reduce unsolicited thoughts. Dr Menzies says that most of the worrying clients find that they worry because their mind drifts without direction from one thing to the other. The more the mind is focused, and the greater the attention, Dr Menzies' clients find that they worry less. The effectiveness of this technique is illustrated by the fact that it takes only one session to learn the attention exercises compared to five sessions to learn how to challenge troublesome thoughts that "sneak through". (Smith, 1995) Dr Menzies' work demonstrates the importance and effectiveness of more efficiently assisting people to learn how to program critical cognitive networks within their brain in order to cope with the environment more efficiently.

Evidence that schools do not adequately model processes such as analysis, evaluation, criticism, discussion

The majority of students using my Centre's services experience difficulties at school for the reason that they have poorly developed constructs of mind. If a student is asked to analyse a concept, most students have little idea of what the clear procedural processes are. In testing the students, most of them would have little idea about the differences between analysis, evaluation, criticism, discussion, comparison and contrast. Most of the students claim that they would respond in much the same way for all of them. Some say that criticism is always a process of fault finding and that analysis is "looking into something". Discussion, to these students, means just "Let's talk about it". Such vague notions lead to waffling and meandering from the subject. Such young people study very hard and cannot work out why they founder so in their examinations. The fact that these matters arise out of work done at school and is so

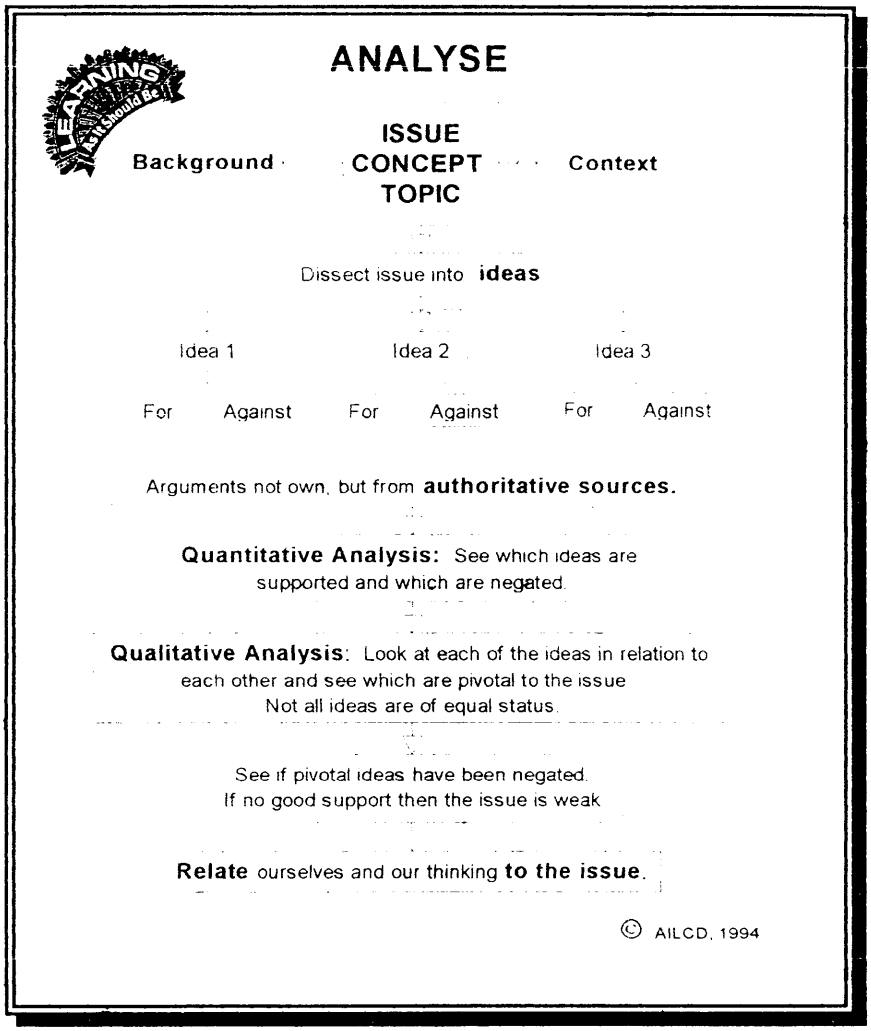
ANALYSE
Background
ISSUE
CONCEPT
TOPIC
Context
Dissect issue into ideas
Idea 1
Idea 2
Idea 3
For
Against
For
Against
For
Against
Arguments not own, but from authoritative sources.
Quantitative Analysis: See which ideas are supported and which are negated.
Qualitative Analysis: Look at each of the ideas in relation to each other and see which are pivotal to the issue
Not all ideas are of equal status.
See if pivotal ideas have been negated.
If no good support then the issue is weak
Relate ourselves and our thinking to the issue.
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Figure 6

poorly understood by the students is evidence that in introducing the work, the teacher has either failed to model acceptable frameworks of thought or has done so inefficiently.

The concept of analysis has been used as an example of a critical pathway of cognition

Figure 6 Analysis, An Example of a Critical Pathway of Cognition

Brunner says education is about developing cognitive tools, not absorbing information

Brunner calls the development of these clear cognitive pathways "tools of the mind". (In Donaldson, 1978, p85) She emphasises the fact that the efficiency in learning is discovered when teachers, parents and students have a clear view of what education is about, that it is not about information but it is about developing cognitive tools in order to be able to process information.

Olson says intelligence is cultivated

This concept is backed up by David Olson who says "Intelligence is not something we have that is immutable; it is something we cultivate by operating with a technology, or something we create by inventing a new technology." (Donaldson, 1978, p85)

Critical pathways i.e. cognitive tools, need to become the focus of education

In this new approach to education the development of critical pathways or cognitive tools needs to become the object of the curriculum rather than just a by-product. (Dr Lazar Stankov, in Dayton, 1994) At the moment information is the primary goal of teaching but information needs to be the vehicle for teaching the primary and lasting skills, cognition.

Educational Deficits are Cognitively Based, Seldom Topically

"More of the same" is seldom the answer for children experiencing difficulties at school

The enormous number of coaches advertised in papers and on noticeboards in shopping centres indicates a popular notion that educational difficulties are primarily deemed to be information based. While some students may suffer in this way because of sickness, moving from one locality to another, or for some other reason where the student has not been able to be present when the teaching has taken place, very few persistent educational difficulties can be solved by

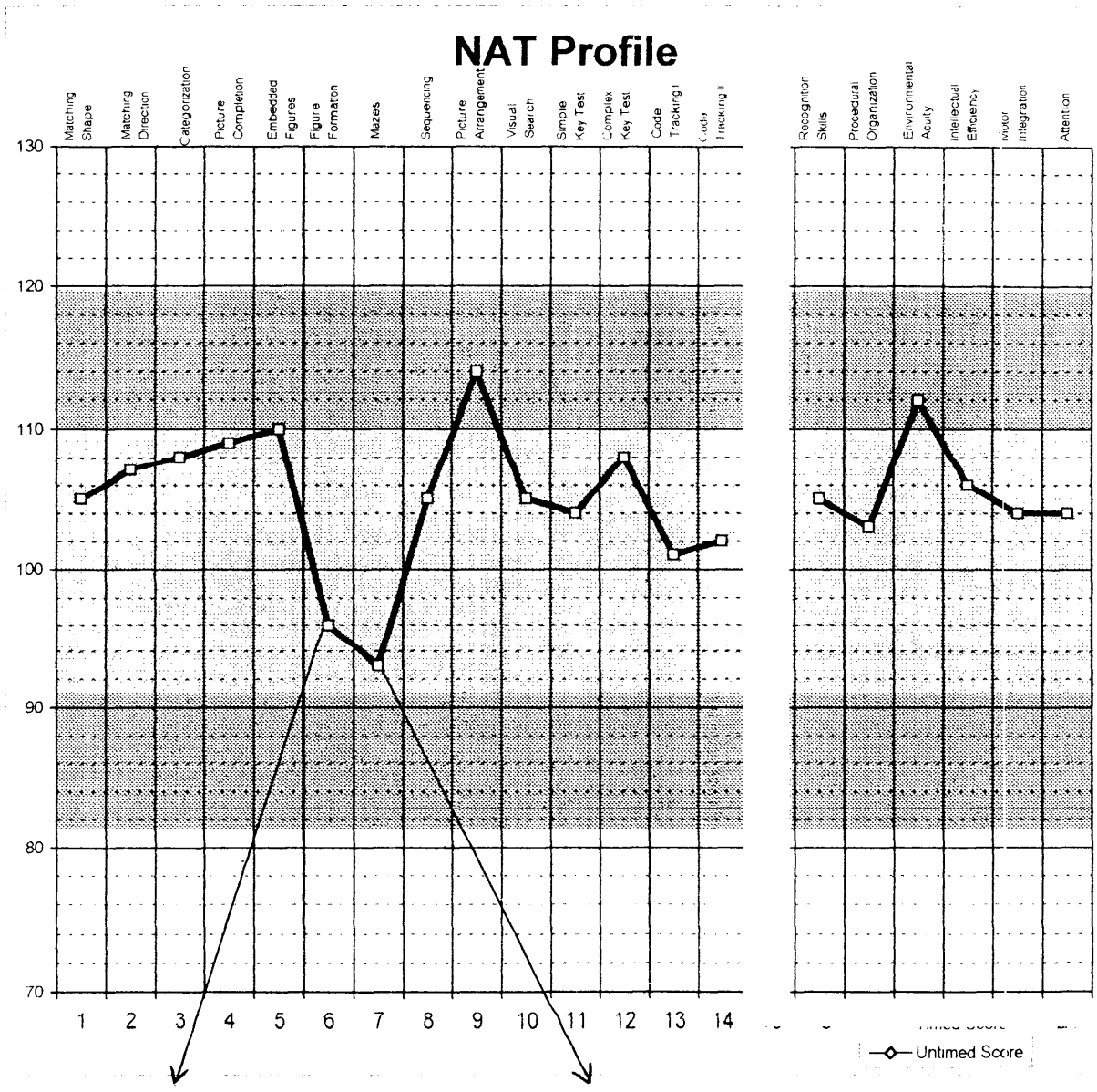
Perceived Needs Matched To Cognitive Deficits

Introduction & Background

Lee has experienced a spelling problem for years. Reading used to be a problem until he entered the work force. When reading, Lee will often change a word for another word with the same meaning. Lee will often pronounce words incorrectly.

Figure 7

Lee



Analysis and synthesis difficulties inhibit word analysis for efficient spelling.

Deficient motor-integration inhibit organisation and strategy for processes required for spelling.

F gure 7

Perceived Needs Matched To Cognitive Deficits

Introduction & Background

Leanne is in her second year at university. Concerned about her efficiency in reading, writing and general learning, Leanne sought advice in regards to possible improvement strategies.

From the preliminary interview, it was apparent that Leanne is self-motivated, focussed and has developed a high level of self-help skills.

Figure 7

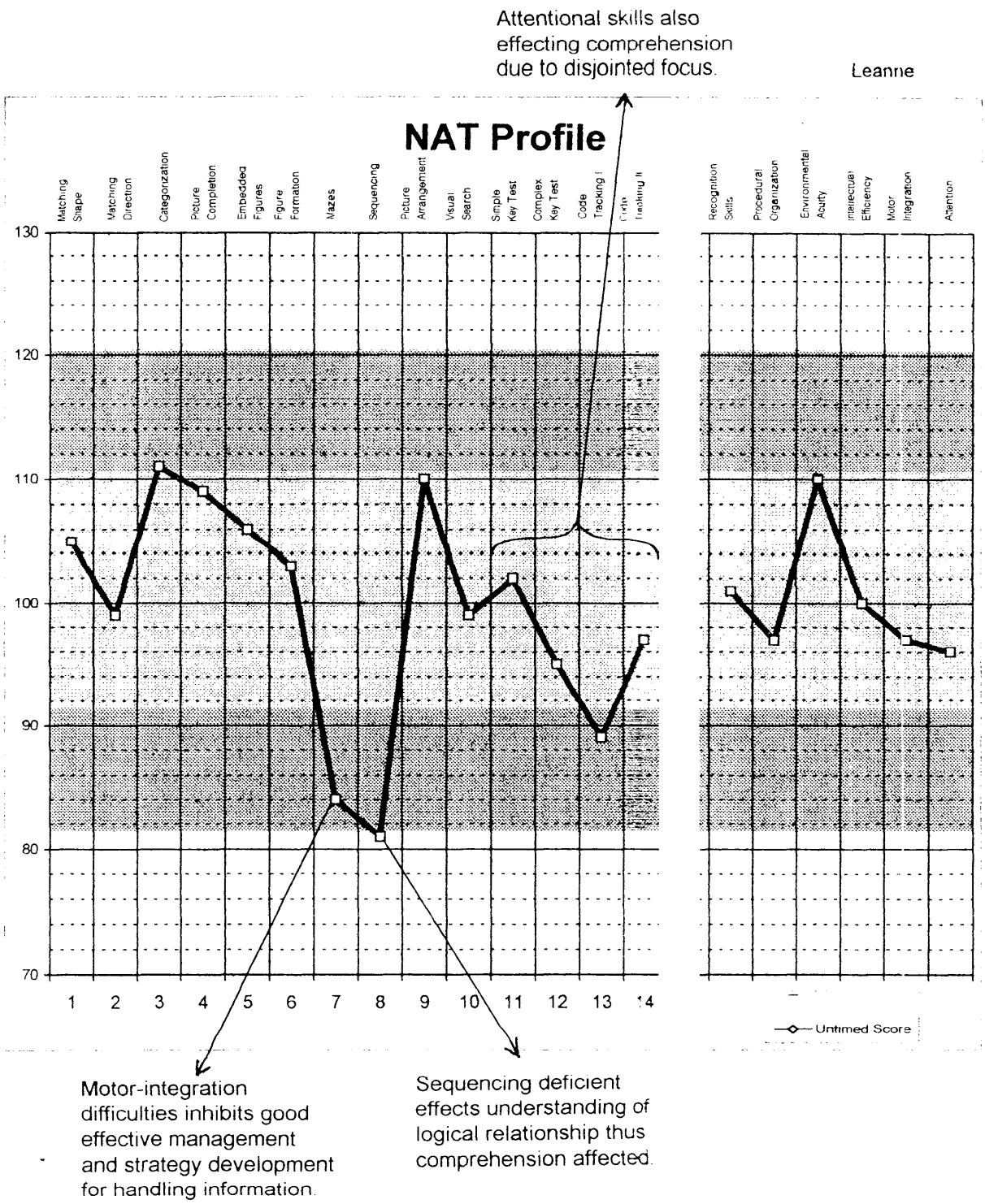

Attentional skills also effecting comprehension due to disjointed focus.
Leanne
NAT Profile
Matching Shape
Matching Direction
Categorization
Picture Completion
Embedded Figures
Figure Formation
Mazes
Sequencing
Picture Arrangement
Visual Search
Simple Key Test
Complex Key Test
Code Tracking
Recognition Skills
Procedural Organization
Environmental Acuity
Intellectual Efficiency
Motor Integration
Attention
130
120
110
100
90
80
70
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Untimed Score
Motor-integration difficulties inhibits good effective management and strategy development for handling information.
Sequencing deficient effects understanding of logical relationship thus comprehension affected.

Figure 7

Perceived Needs Matched To Cognitive Deficits

Introduction & Background

Linda has experienced minor ear infections in the past. As a result of her ear difficulties for a while she pronounced "three" as "free".

Linda had many changes in teachers however, despite this she is a curious learner. Linda achieves well in maths.

Linda has experienced a virus problem which has lowered her immune system. She has had difficulties with fainting. Linda has had an EGC and was found that there was nothing wrong. She is always tired, as a result her school work has declined. She missed six weeks of schooling last year, and first term this year.

Figure 7

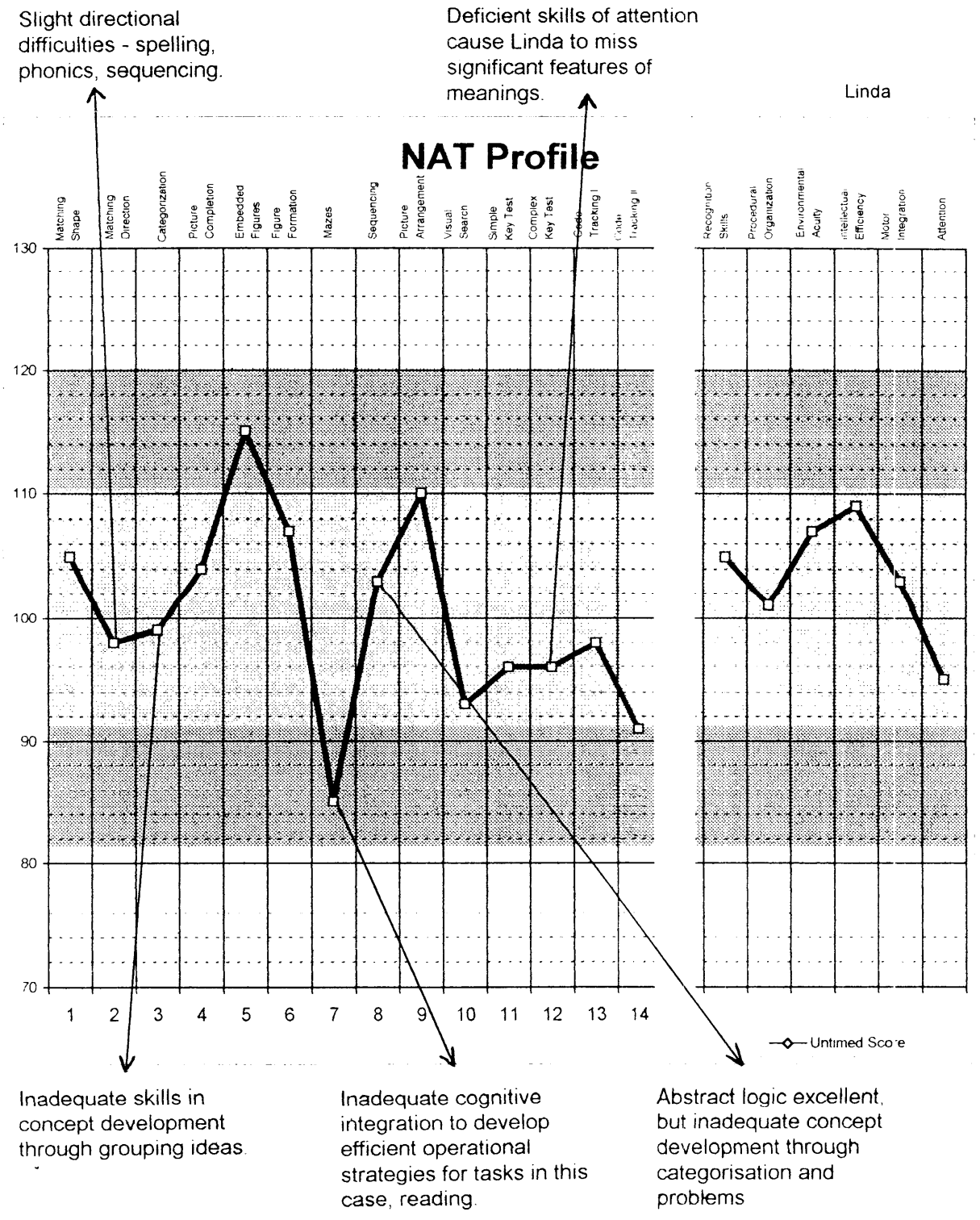

Slight directional difficulties - spelling, phonics, sequencing.
Deficient skills of attention cause Linda to miss significant features of meanings.
Linda
NAT Profile
Matching Shape
Matching Direction
Categorization
Picture Completion
Embedded Figures
Figure Formation
Mazes
Sequencing
Picture Arrangement
Visual Search
Simple Key Test
Complex Key Test
Tracking I
Tracking II
Recognition Skills
Procedural Organization
Environmental Acuity
Intellectual Efficiency
Motor Integration
Attention
130
120
110
100
90
80
70
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Untimed Score
Inadequate skills in concept development through grouping ideas.
Inadequate cognitive integration to develop efficient operational strategies for tasks in this case, reading.
Abstract logic excellent, but inadequate concept development through categorisation and problems

Figure 7

Perceived Needs Matched To Cognitive Deficits

Introduction & Background

Shane is a part-time baker, with interests in martial arts and natural medicine. He would like to become involved in multimedia graphics.

Shane feels he has the ability to strive for excellence and yet never seems to accomplish it. He lacks the discipline necessary to complete tasks and also lacks commitment.

Although Shane spends time reading personal development material, he has difficulty comprehending what he has read.

Emotionally Shane is rather static.

A very real struggle Shane has is to know what to do in his life. This bothers him every day.

Figure 7

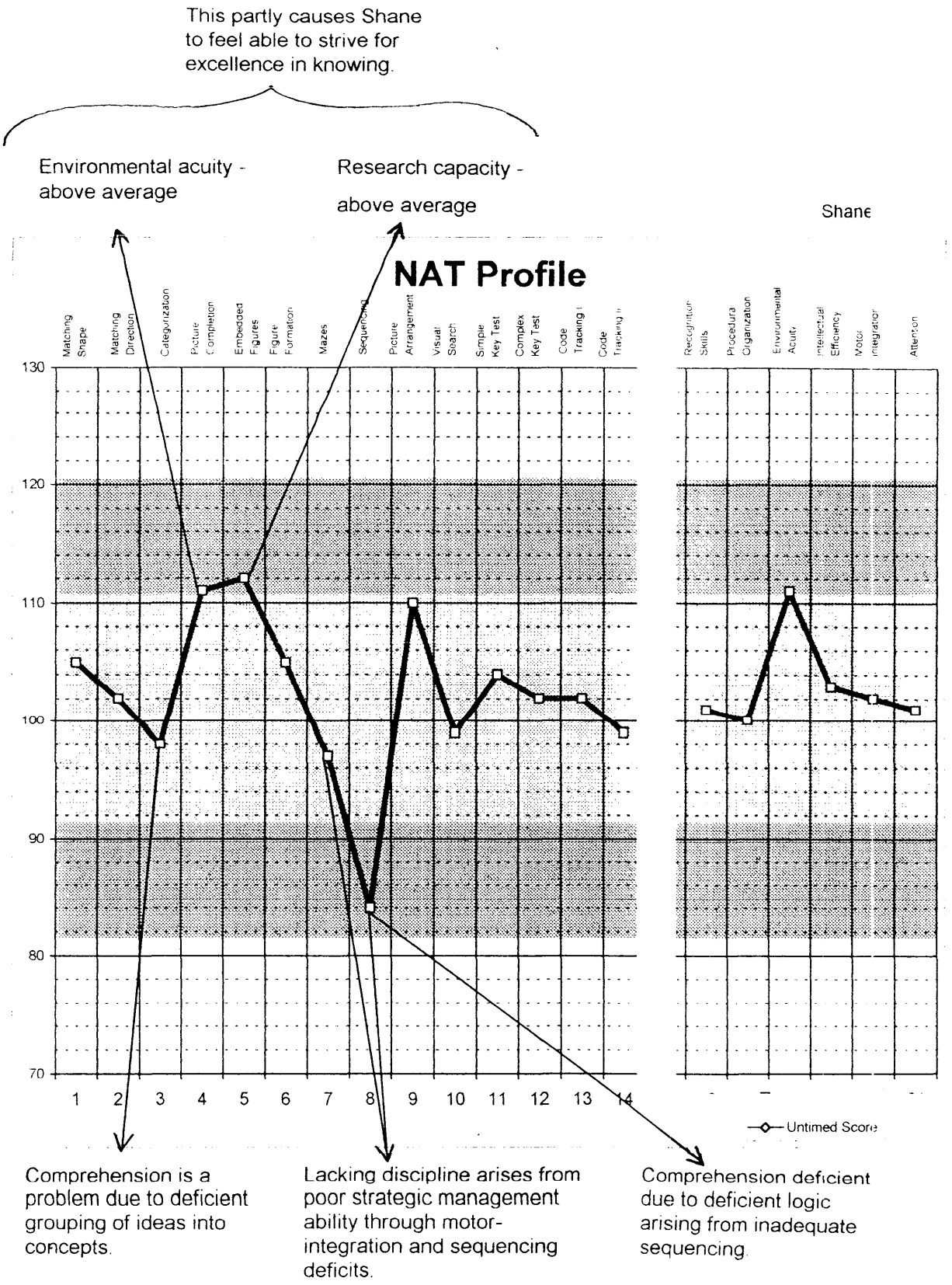

This partly causes Shane to feel able to strive for excellence in knowing.
Environmental acuity - above average
Research capacity - above average
Shane
NAT Profile
Matching Shape
Matching Direction
Categorization
Picture Completion
Embedded Figures
Figure Formation
Mazes
Sequencing
Picture Arrangement
Visual Search
Simple Key Test
Complex Key Test
Code Tracking I
Code Tracking II
Recognition Skills
Procedural Organization
Environmental Acuity
Intellectual Efficiency
Motor Integration
Attention
130
120
110
100
90
80
70
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Untimed Score
Comprehension is a problem due to deficient grouping of ideas into concepts.
Lacking discipline arises from poor strategic management ability through motor-integration and sequencing deficits.
Comprehension deficient due to deficient logic arising from inadequate sequencing.

Figure 7

employing the services of a coach who remediates through information dissemination. I believe that most long term difficulties arise from cognitive skill deficits. This is validated by the work of Helga Rowe in the Non-verbal Ability Tests of Cognitive Skills and the Wisc-R and Wisc-iii. These tests are based on the concept that cognitive skill deficits are at the seat of academic difficulties. All these cognitive skills are examples of critical pathway networks that are required by the brain before efficient interaction with the environment is possible, and particularly the academic environment.

Illustrated are a number of cognitive skill graphs associated with the original statement of perceived educational deficit by parent and/or teachers. These students had sought an enormous amount of traditional assistance from coaches and various educational services. In desperation parents sought my help in a last ditch bid of assisting their children since nothing else educationally appeared to work. In all these cases a relatively simple improvement of deficient cognitive skill enabled the individual to improve dramatically in academic work even though I did not address the subject areas themselves.

Cognitive testing and remediation, without having to address the subject matter directly, has been the answer for many clients.

See NAT graphs showing cognitive domains and parents' comments of perceived needs.

Figure 7 NAT Graphs with Parents' Statements of Perceived Needs

From my own professional experience I have found that much educational time is wasted, in and out of the school system, trying to deal with educational difficulties but failing to recognise the role of cognitive development in them. In fact, very many are ignorant of the basic cognitive domains that are pre-requisite to the learning process. See appendix for cognitive domains.

Huge amounts of educational time are wasted chasing the wrong targets

Teacher Equips, Student Researches

For an individual to cope with the information and knowledge of life, education needs to be divided into three distinct phases. The first is labelling. This is the process of knowing about things. Small children enjoy stories that tell

Schools prolong the first two developmental stages of interest thus boring children who need to move into the

about things, for example "Spot, the dog", "Thomas the Tank Engine" and many others. The next phase that interests older children is learning about how things work and what makes things happen and the events that have happened in the past. Such learning generally occurs in middle to upper primary school. The third phase is dealing with relationships or circumstances and this is the phase of learning where, I believe, the education system comes undone. In my view too much of learning about things and happenings continue on for too long in isolation from the considerations of relationship and circumstance. School becomes boring to so many young people as they are just snowed under with information about things and happenings. This is the stage in life where an enormous shift needs to occur in the education system from the teaching of information and facts to emphasising the teaching of critical pathways of thinking so that the emphasis of education is centred on the development of cognition in order that the individual is able to pursue the vast amount of information and knowledge to be gained in the world that is impossible for the school and the education system generally to cope with. It is a great pity that students arrive at the end of high school feeling that little has been done to assist them in coping with life and many who are discouraged from education for the remainder of their lives. If thinking is the main emphasis of high school education, at least every student will have a sense of having grown and developed.

third stage

I am placing great emphasis on the need to learn cognitive skills from the earliest phases of life and school, but they cannot be learned in isolation from facts. Primary school, and perhaps in the most junior part of high school, is also the place for students to learn a great many facts. Facts themselves have another purpose, too. Facts are the basis of the cognitive skill of assumption.

Facts serve two purposes, essential for applications of cognitive skills and they form the basis of the cognitive skill of assumption

The Cognitive Skill Of Assumption

The mature adult thinker is able to cope with a great deal more complexity in his/her thinking life due to the development of "assumed knowledge". Assumed knowledge is the framework of basic functional experiences upon which an individual has become so practised that this individual can accept the knowledge in well founded faith. For example, if one aeroplane is travelling at 1000 kilometres an

Assumptions result from packaging logical relationships into experiential packages of knowledge

hour and another is travelling at 600 kph the mature thinker will immediately expect the faster plane to arrive sooner than the slower. Several other assumptions will also be made too. In assuming the faster plane arrives sooner we also assume that the two planes left at the same time, probably from the same place, probably going to the same destination, that the faster plane did not encounter headwinds of 400 kph and probably several others. Another assumption is that "kilometres an hour" and "kph" mean the same thing. All these assumptions come as a result of understanding the skill of packaging logical relationships into experiential packets of knowledge. This is closely related to the process of rule induction and that is recognising re-occurring patterns that produce reliable outcomes. These rules, after being tested many times in a person's experiences become assumed knowledge.

Assumed knowledge forms the basis of our style of writing. For readers who have only limited ability to detect "assumed knowledge" it would be necessary include considerable detail in order to make the subject matter clear. In such writing so much time is spent explaining comparatively simple matters that it is not feasible to delve into the deeper reaches of the subject. To write about the "new frontiers" of a subject, we assume our reader has considerable knowledge and can omit the tedious detail and concentrate on the more complex matters.

Without assumed knowledge new thinking would be much more difficult

The development of an adequate range of assumptive frameworks sufficient for effective adult efficiency in thinking and communicating relies on a wide ranging development in knowing about things. These basic things need to be known, experienced and indelibly impressed on the individuals mind. Penelope Leech, a renown child psychologist, states that at a young age children just love repeating things over and over. ("Sunday", Channel 9, Sydney, 28 May, 1995, Australian Federal Government, Department of Parliamentary Library, Information, Storage and Retrieval, p4) It is not the children who become bored with this scenario but adults are nearly driven out of their mind with the repetition. The increasing feelings of boredom often causes the carer adults to believe that this activity will create boredom in the child. The boredom is the phenomenon of the adult, not the child for it is a mechanism that the child possesses that assists it to thoroughly internalise the knowledge of things in the world. A child will repeat the interaction with things until it has sufficiently internalised the knowledge of that thing in terms of touch, sight, action,

Repetition is essential for the internalisation of information so the child can convert information to knowledge

hearing and very often taste. The repeated interaction builds more and more interpretants (most outstanding features that attract the individual at a particular time) until a child builds a strong sign or signal network in the brain for that particular thing. When familiar with the thing a child will move on to the next thing.

Television presents the child's interests in a fast moving format thus preventing repetition and therefore internalisation

For this foundation activity to occur, a child must interact with its environment in a low stimulus mode. This means that small children need to be shielded from high stimulus activities. A very common example is the way many parents use the television medium. Many of the children's programs are child's interests presented in an adult way of thinking. The adult assumes that repetition is boring and therefore constructs the program that teaches the child about things in a fast moving, fleeting, format. Thus, the child is exposed to a wide range of *thing* experiences but skips the internalisation process. Such an approach causes the child to interact with its world at a much higher level of stimulation. The child becomes accustomed to reacting to only those things that possess high stimulus qualities thus causing the child to miss many of the important low stimulus things of life. The fast moving nature of the programs desensitise the child to the desirable effects of repetition. Such children will grow up to become restless and ever seeking instant stimulus gratification without pondering long enough with the stimuli to obtain depth of stimulus experience. Thus, many children have a huge breadth of exposure with very shallow depth of internalised experience. The ideal development is low level stimuli providing the child time for internalisation and the length of time so that the child is enabled to experience a very wide range of things but with depth. It is only in this way that the child will emerge as an adult with a sufficiently well grounded knowledge of things that will then motivate the child in academic curiosity to then pursue the next stage of development and that is to know the function of things or how things work.

Parents and schools should monitor the progress of internalisation

The repetition years where a child gladly internalises the knowledge of things occurs from birth to approximately 6 to 8 years old. In this time both parents and teachers need to enrich the child's environment with low level stimulus learning experiences which, at the same time, has a great breadth of opportunity. In other words, parents and teachers need to monitor closely the child's activities to know when to efficiently introduce the new experience after the first has been internalised. It is during these years that

many of the basic concepts of maths and the structure of language can be taught and accepted readily by the child in a repetitious environment. If we miss these years, the basics that need to be learned are achieved with great emotional trauma as, at a later age, children abhor repetition. A problem that I have encountered in the schooling of my own children is that many children come from homes where high stimulus activities have been the norm since birth. They require high stimulus, fast moving, activities in order to keep discipline within the class room. The nature of the work activities, even from Kindergarten have been presented with an emphasis on stimulus thus, in many cases, missing the point of the topic. For example, my daughter was being taught how to add but it was presented with a page full of frogs, flowers and many other stimulating things. As a result, she became involved in colouring in the all the things and talking about frogs, flowers, trees but completely missed the point of how to add. For homework, I had to provide her with additional assistance emphasising the sequential stimulus of adding rather than the global stimulus of a multitude of things on a very busy page.

The consequences of failing to internalise things

The problem of high level stimuli exposure at a very young age at home is that it interrupts the necessary groundwork for later development at home and at school. At school, such children react to low level stimulus activities with frustration and boredom thus creating disciplinary problems. However, when presented with higher stimulus materials with frequent movement from one stimulus to another, internalisation and depth learning, from my experience, does not occur. Thus, the children are poorly prepared for developing assumptive frameworks in the future that will enable the child to gain efficiency in the learning process. Children with a very poor internalisation about the things in their world have a reasonably low level of academic curiosity which provides the motivation to pursue the functional aspects of the *things* in the next stage of their educational development. This functional development assists the child to experience the actions and the degree of predicability of actions on the environment. In the lower primary school years, a child may learn about cars and trucks, in the upper years, they may learn the strengths and limitations of the cars and trucks. The upper speed limits, the loads and the uses. It begins to develop assumptive packages of things in the environment. This concept of learning while encouraged at school then becomes the pattern of the child's learning outside the classroom, that is to pursue an understanding of

the concept of function. However, without a well grounded preparation of knowing things and the development of appropriate cognitive skills that relate to learning about things such as the concepts of shape, direction, categorisation and the ability to pull things apart and put things together again (analysis and synthesis) the child is going to have difficulty in being able to conceptualise the models relating to function.

Being able to make assumptions is important but even more important is the need to test each individual assumption must pass the test of rationality

Students who have appropriately developed a firm base for learning at this stage begin to develop rules for functional expectations that assist the child in developing a framework of assumptions. While assumptions provide a cognitive tool to allow for the efficiency in communication and in learning it is a danger to universally view assumptions as being applicable to all situations. Thus, it is important that as the child becomes proficient in the use of assumption as exhibited in the child's ability to handle inference or implied meaning, that the next stage of cognitive development is then addressed and that is the skills of metacognition. Metacognition prepares the thinker with skills that enable the modification of thinking to suit the application of thought. When a child has learned to use assumptive skills (s)he is now taught to investigate the assumptions in the light of the particular application to ensure that there is not a miss-match between the assumption framework and the outcome expected. For example, an individual calculating the amount of fuel that is required for a water-ski outing is going to be a great deal different in terms of assumptions used compared to a pilot estimating the amount of fuel required to reach a particular destination. From experience the boat owner is able to assume that each tank provides x hours of running time and therefore is able to make an approximation of whether there is sufficient fuel for the day. The assumption, in this case, did not require modification in that the seriousness of miscalculation would provide only inconvenience but not danger. In the case of refuelling an aircraft, while the assumption of fuel usage forms the base of the estimation, metacognitively the assumption is tested by checking factors that may alter the reality of the assumption such as headwind, passenger and cargo load, length of strip for take-off and the possibility of waiting time for clearance to land. If a pilot failed to check the rationality of accepting his/her assumptions the efficiency gained in the thinking process would be lost in disaster. Therefore the test of rationality is another cognitive skill designed to monitor the use of assumption.

Rationalism is the habit of accepting reason as the supreme authority in the matter of opinion, beliefs or conduct. Assumed knowledge becomes opinion or belief. One must be taught that each of our assumptions must be regularly scrutinised for it's current rationality. For example, a doctor today my assume a particular body of knowledge to treat a patient but next year new research may demonstrate that the original assumption may have only partially addressed the problem. Thus, by the doctor continually checking his/her assumptions against new reasoning will alter the assumption package that (s)he uses. Individuals who fail to be conscious of this process became outdated in their assumptive base and thus lack relevance to the current changed conditions. For example, my late grandmother believed that it was not safe to drive a car faster than twenty miles an hour. When she had developed this assumption package, roads were dirt, cars were not as well engineered for handling rough surfaces or for safety when cornering. Breaking technology had not reached the standard that it has today. However, she had no awareness of how assumptions drive the individuals thinking process and was unaware that she was irrelevant in her thinking in the present context because of her assumptions. She had not been taught how one must exercise the cognitive skill of rationality to continually up date and test her assumptions. The degree of awareness that a person has in this metacognitive domain either enhances or hinders a persons ability to advance in learning throughout one's lifetime.

The degree to which one re–examines, and alters when necessary, his/her opinions and assumptions is a vital factor in one's ability to learn

The developmental stages in the modelling of assumption should be carefully monitored by teachers and parents. Parents and teachers must nurture each stage without prolonging any stage to the point of boring the child. Always remembering the judgement of boring must be through the eyes of the child, not of the adult. The stages are:

The developmental stages in modelling assumption should be carefully monitored by teachers and parents

- Development of operative cognitive skill base.
- Attaining a wide knowledge of things, understanding how those things operate.
- Forming packages of basic assumption then to learn how to monitor and control assumption.

All are all necessary so that children grow into clear thinking adults.

At the present time, a careful investigation of our education

We need a careful investigation of our

education system

system is needed in order to better fine tune the various stages of a child's education. There needs to be better parent education in preparing children for the learning process. Teachers for the first three years of a child's schooling must be totally aware of the most essential things the child needs to be taught. Then in upper primary to junior high school, teachers need to be aware of emphasising the functional aspects of the things around the child. The function of language, the function of numbers and what is possible to do with them, the function of language and how we can use it to make ourselves efficiently understood, the function of weather, the function of family, government, machines, laws, commerce, and many other functions that will provide the child with the materials that will make it possible to develop assumptions. Once the child has developed assumptively, there is an urgent need to change from a thing/function approach to teaching to a metacognitive approach from the third year of high school to the HSC. I believe the object of education from that point needs to be a cognitive focus. Cognition needs to be taught as a conscious agenda, where today, cognition is a by-product of an information agenda. The reason for this change is that in the first place we cannot teach people all information there is to know, therefore, we must teach individuals how to access information and how to think about it for themselves. Individuals must know how to control the on going assumptions they develop and how to be continuously aware of updating current assumptions. If we concentrate our curriculum on information, the students will only have developed the assumptions relevant to that information. We have not made the individuals aware of how that knowledge is acting on them in terms of assumptive influences. Thus, we develop individuals whose assumptive base becomes spurious due to being out dated. Technology is changing at such a rapid rate that irrelevancy can occur within the space of two or three years. Educationalists must face this issue and turn from the information based teaching from the third year of high school to the HSC. We must enable the student to pursue knowledge and know how to update his/her assumption base on a regular basis. This is relevance based curriculum.

Languaging Skills

Language is central to cognition

Language is central to cognition. Best, 1995, states that he believes that languaging seems intimately bound with

thought. (p16) In fact it is through language that I believe that we develop cognition. Cognition is the establishment of critical pathways constructed in language. In fact, our language images the way we learn and develop the assumptive process. It also reflects the way in which a child learns to speak and generally cope with the thinking process. (Best, 1995, p276) A child's first words will be that of labelling things. As the child progresses in its ability to speak, the child will add actions to the labels. After much practice the child, in its speaking, will then relate the thing and it is doing to a particular relationship or circumstance. In developing the sophisticated processes of a child's learning it flows along the same pattern. Even though the young child is able to speak in complete sentences in the early stages of learning, it will favour learning about things and as it progresses in chronological age will wish to learn about the action or how things work. As the child reaches more maturity in high school, it will want to learn about relationships. It is this circumstantial framework that enables the thinker to consider the rationality of the thing and the event that the thing is carrying out. It is as we view relationships the rationality is able to be understood and considered. Thus, it can be seen that the very pattern of language itself is a critical pathway through which the individual is driven to establish rationality. However, when the structure of language is not understood, the individual is not as likely to gain a habit of acutely being aware of relationships that causes one to view the context of the thing as it interacts in the event. It is, therefore, essential that every child posses a very clear picture of language and how it mirrors the thinking process.

Using *thing*, *event* and *circumstance* to describe grammar correlates with the stages of developing cognition and gives clients a sound understanding of the meaning contained in sentences

Thing, *event*, and *circumstance* are the models through which I demonstrate the structure of language In this way, it demonstrates how we think through language and how through language we can model our thinking. It is my belief that the more sophisticated one's language is the more sophisticated can our thinking be. It is through clear and precise languaging that clear assumptive patterns of mind may be constructed and remembered as language itself is the programming medium of the brain. It is the medium through which thinking may be coded and therefore constructed. I have discovered in my practice that the very first task in assisting anyone is to immediately raise their awareness of languaging structure and their thinking processes will easily follow on

Language Makes the Person

Personality is largely judged by the imagery used in language

Society judges people by their personality. This is a coded word that encompasses many different concepts. Personality is a set of unique outward features that are emphasised by a particular person. The most notable outward features of a person is achieved through that person's communication. Most people who are well liked express themselves well. The listeners believe that the individual is exciting as that individual uses imagery and words that graphically convey pictures of meaning and incite enthusiasm and relationship

People who are considered as "reliable" use thing, event and circumstance to analyse incoming data

Another positive personality trait is being able to take in information and correlate it accurately thus producing valid frameworks of thinking. Such a person is perceived as being reliable and avoids misconstruing relationships and circumstances. This is carried out by that person's systematic analytic approach of first dealing with the labels or terminology of the concepts being addressed. Such a person requires clear definitions that, once established, attend to the descriptive features of the incoming information. This process is found in the *thing*[37] model process of languaging. Next, the person attends to the function or events that are carried out by this thing. Thus, the *thing* has defining characteristics in terms of features or function, i.e. the *event* model. Finally, the features and function of the things being addressed are related to other things in the environment. This is the process of obtaining context, i.e. the *circumstance* model. A person who diligently observes his/her environment in such a systematic way is considered a person of stable and reliable opinion. These qualities are much admired. The structure of our languaging process provides an individual with cognitive pathways that will lead to such reliability.

The logic of an unreliable rumour monger

The above individual can be contrasted with an individual who snatches isolated terms and labels related to a *thing* of a concept. These are then correlated with past experiences without discovering the relationship or context of the *thing* being addressed. An example of this was a rumour developed about a family I know. The rumour conveyed the idea that this friend's marriage was breaking up. The critical

37 *Thing*, *event* and *circumstance* are used as technical words relating to the syntax of the English language. Because they could be confused with less technical meanings of the same words they will be written in italics when the technical meanings are intended.

label associated with this concept was separation of the couple in some social circumstances. Little heed was given to the descriptive features of the separation other than that for several weeks each had been going to a different church. This information was then correlated by the viewer with a previous experience where another couple had gone to separate churches and the marriage had broken up. Thus, armed with this correlation the viewer made a spurious assumption that led to a most hurting rumour. It is unfortunate but it was this person's habit to make such correlation errors. It has been my experience that people who make such errors often do so due to a poorly defined procedure for meaning making in language. Such individuals most commonly relate to the *thing* model and to the *event* model but have little notion of the significance of the *circumstance* model in thoroughly validated thought. This ignorance of the *circumstance* model occurs whether they are initiating the communication as well as when they are interpreting the words of others.

Considerations that should have been made

If the above person had a well defined understanding of meaning making, the following considerations would have been made. The features of the separation were:

- The wife had made a commitment to take Bible classes at a particular church for several weeks.
- The children's school, unbeknown to the parents committed the children to a planned program for several weeks in another church.
- Since the children needed to be transported to the other church the father undertook this task and thus was separated from mother's activities.

Understanding the *circumstance* is the key to correctly interpreting the *thing* and the *event*

Subsequently the *event* or action that occurred was the couple, having to attend separate venues. The *circumstance* of this separation, when understanding the context and description of the *thing,* separation can be appreciated as being a temporary measure.

Languaging must encompass meaning making processes that are closely associated with linguistic patterns of behaviour

People who frequently make the errors as illustrated above in their assumption building process do it through the ignorance of meaning making processes that are a part of our languaging knowledge. Languaging goes well beyond encoding and decoding but must encompass meaning making processes that are closely tied to overall linguistic

patterns of behaviour. (Butt et al, 1989,)

Thing, event and *circumstance* form the basis of both language and understanding

A person with good languaging skills understands the potential requirement of information, that is *thing, event* and *circumstance*, to be collected before the correlation of information can be made. A person with poor understanding of languaging requirements has little understanding of the potential information that is required before correlating the information and applying it to past experiences.

Knowing the *circumstance* is particularly important for sound understanding

One often hears people saying that a particular thing being discussed is the biggest and the best. Those without comprehensive languaging skills will often accept the conceptual construct provided. However, a person with well developed languaging skills will recognise the need for additional information. They will seek a relational measurement. Bigger and better than what? When people develop reliable linguistic patterns of judgement, such people become more trusted and liked.

Effective languaging skills are a prerequisite for effective analysis

It could be argued that it is the cognitive skill of analysis, rather than languaging, that produces insight and reliability. It needs to be understood that the construct of analysis could not exist without language to develop the cognitive concept in the first place. The very act of perceiving the concept is language based, let alone the process of breaking the concept into its parts. Without language any response could only be stimulus-reaction. Individuals who operate towards the mode of stimulus-response are looked upon as reactive and temperamental individuals lacking judgement and control. When encountering such people a common response is that (s)he did not think the situation through before responding. This is almost a common lore acknowledgment on the part of observers who understand within themselves what must take place to provide a better response, that is more attention given to the thinking process developed through language.

My clinical experience is that clients who lack self confidence also lack languaging skills

When interviewing prospective clients who have difficulty in projecting themselves as confident, well adjusted individuals I frequently notice that they have languaging limitations. Language improvement is therefore a central therapy at the Hornsby Centre.

Agents of Death

The rat's role as a vandal is the smallest part of its menace. Bubonic plague, transmitted to man by fleas from rants, was responsible for the death of one-fourth of Europe's population in the fourteenth centaury. Historians call that plague the Black Death. The plague hit London in 1665 and before it subsided, there were 100,000 casualties.

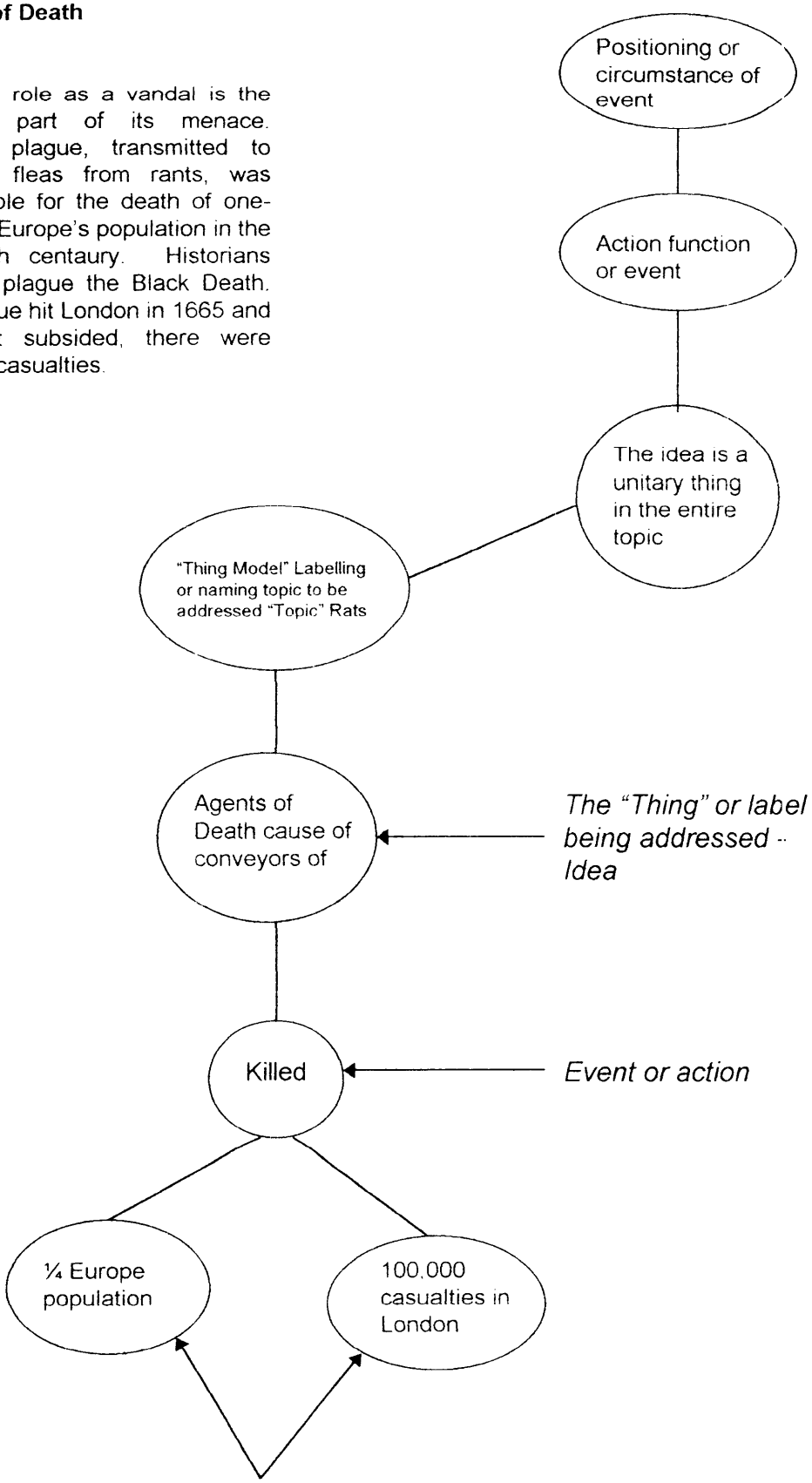


Figure 8

Study Skills

Sound study skills and strategies are based on sound languaging skills

Developing knowledge of sound languaging skills has proved to be the most effective first step in improving the study skills and strategies of my clients. Study is purely managing information and arranging the information into networks of conceptual constructs. This process is dependent upon closely developing study techniques parallel to linguistic patterns.

Mind mapping is a visual summary that, when organised along the lines of thing, event and circumstance provides a powerful study method

Mind mapping is a study technique that has stirred the imagination of a number of authors. (Edwards, 1989, pp 65-77) However, many authors fail to recognise the valuable link that they are making with the syntactic structure of language itself. The central part of a mind map or topic is the *thing* being addressed. The ideas are the individual *things* that are features of the main topic *thing*. The details as referred to by the authors on mind mapping are *events/functions* and *circumstances*. The reason that mind maps are so successful for many people is that they cause people to dissect meaning into modules and without knowing it many are intuitively gathering the necessary models of meaning for efficient comprehension. However, if mind mapping is carried out with the knowledge of the essential models of meaning in language, the learning becomes more meaningful and the mind mapper is confident of gathering the appropriate linguistic models for complete understanding of any concept.

A mind map assists a student to separate and identify the things, events and circumstances and to understand the relationship of each to the others.

Figure 8 Mind Map Helps Show Relationship Between thing, event, *and* circumstance

Functional grammar is much more than a description of how words are connected, it provides a pattern of how meaning is made

The *thing, event, circumstance* model[38] of constructing sentences was produced in 1989 by myself and others in conjunction with M. A. K. Halliday (Emeritus Professor of Linguistics, University of Sydney) to simplify his original concept of functional grammar. This concept was widely

38 This model will be explained later in this thesis.

Thing Model

The thing model is the text structure in which things in our world are modelled. This chart outlines the parts of speech which are used to describe things and also places each part of speech into the accepted relationship, which is considered to convey clear meaning. While each model fixes components of language in a strict order, the models as a whole can be moved about in their relationship to one another. Flexibility within each model is achieved by including or excluding component parts of the model. Understanding the order and function of each model assists writers to avoid unclear messaging through inappropriately placing parts of speech. The chart also provides a reminder of the possible meaning making materials that are available in each meaning model.

Pointer	Front Specifier	Headword	Back Specifier
	Adjectives	Noun	Adjectival Phrases of Clauses
	Quantifier Qualifier Classifier		

Figure 9

Event Model

The event model, as with all other meaning models, provides the writer with a cohesive idea of what materials of meaning or parts of speech combine to model the happenings of the world around us. Finite verbs often limit actions verbs. Adverbs add meaning to the head word or main verb of the sentence. The headword can be either an action verb or a finite verb. A finite verb is only used as a head word when there is no action verb. Attached meaning are adverbial clauses. However, there is no need to become complex in our study of text as an attached meaning can be detected by asking "what?" after the headword. IF WHAT FOLLOWS ANSWERS TO "WHAT?", then the following text is an "attached meaning" up to the preposition.

Notice how the only compulsory component of the model is once again the headword. Understanding the meaning models help us remember what materials of meaning are available for meaning making and in what order.

Limiter	Helper Words	Headword	Attached Meaning
Finite Verbs	Adverbs	Action or Finite Verbs	

Figure 9

Circumstance Model

The circumstance model positions the event before it. Since a circumstance is demonstrating a relationship, it can be imagined that the event will be positioned in relation to some other event or another thing. Hence, in most sentences the event is positioned in relation to a thing . Circumstances are often found in multiple models as an event can often be related to a number of circumstances at a time. Circumstances can be recognised as they tell the reader, how, when, why and where something happened.

Relational Word	Additional Thing Model
Preposition	

Figure 9

circulated to tertiary linguistic departments throughout the world and is used by linguistic faculties within Australia. Functional grammar supports the concept that grammar is much more than a description of how words are connected. It provides a pattern of how meaning is made. Functional grammar is therefore an organisational revelation of languaging through the mind. When the divisions of meaning are therefore correlated closely with the organisation of our learning the greatest efficiency is discovered.

Thing, event and circumstance tables show how a sentence is broken up into three distinct models of meaning. Understanding a sentence from this perspective provides a pattern of meaning that can act as recall triggers when extracting information from memory.

Figure 9 Thing, Event and Circumstance

Concepts are most easily learned if studied in the same order as the segments of a simple sentence

In a study context, concepts are learned more easily if we first understand the definitional meaning of the things, with which we deal. Once we have a clear definition of the things we are learning function and contextual relationship to the environment are important. Thus, all meaning models that are found in a basic sentence[39] are addressed when a full understanding is achieved.

One of my most significant observations is that poor sense of grammar and poor thinking go together

Grammatical structure is more than just how to put words together but is the very function of the most efficient processes of the mind. Grammatical structure has been developed over a period of many hundreds of years by thousands of good thinkers. It is upon this heritage that improvement in thinking can occur. It has been my experience at the Centre that those with a poor sense of grammatical awareness also have difficulty with clear thinking, especially when the thinking task is large and in-depth. This is one of the most significant discoveries that I have made in working with a great number of individuals facing academic deficiencies. Language and grammatical therapies are central to my program.

39 A basic sentence is one which uses single thing, event, circumstance in that order.

The Importance of Vocabulary in Study and Recall

It is important for students to understand and use the encapsulated words of the subject

Many students try to study by using the same old, tired words. Instead, new words that are more efficient in building new concepts need to be continually learned. Few people stop to think that word power is mind power. It could be that one new word could encapsulate a wide range of meaning. For example, a year 11 client of mine converted all the most difficult words in his textbook to simple language that he felt he could understand and handle more comfortably. Of course this is a legitimate process for gaining an understanding of a new topic However, this individual was carrying out the process in order to avoid the new more difficult terminology. The results of his labours obtained a full understanding of the topic but when faced with an assessment task under exam conditions, he could not complete answering the questions in time. He had plenty to write about but in an enormous number of words. This student did not want to use the bigger words as he would have to learn to spell them. An example of an encapsulated word could be "precision" – a process carried out with great degree of accuracy (Macquarie Dictionary, 1989, Macquarie University Press, Sydney) To avoid using this word the student wrote "a measurement can only be considered accurate if the one measuring takes care to align the eye precisely over the mark to be marked off". This can be written more powerfully as follows "A precise measurement can only be achieved by avoiding parallax error". In the first example, where the individual was avoiding the larger encapsulated words, 25 words were necessary, but in the second example where the words "precise" and "parallax error" were used, only 11 words were needed. This is a saving of 14 words. Consider this repeated over many sentences. This illustrated how many words can be saved by using encapsulated words. "Precise" accounted for five words and "parallax error" accounted for 9 to 11 words depending upon how explicit one wanted to be.

Two principles of using Plain English, use:

- Active voice
- Encapsulated words

The government Plain English Policy emphasis is often misunderstood by the educational community since many teachers, public servants and students have little concept of grammar[40]. They miss the point of what has made legal and

40From 1972 to 1994 grammar was not been taught officially or systematically by schools in NSW.

professional documents complex. The complexity of language revolved around using passive voice which led to convoluted meaning. This then provides comprehension inefficiencies. Plain English does not refer to the use of simplistic, inefficient English where convolution is replaced by equally as inefficient communication through volume. Widening vocabulary so that larger words can encapsulate lengthy explanations are most necessary to avoid comprehension difficulties in written communication. The smaller the word number the easier it is for a concept to be understood and recalled. Vocabulary is not just the process of learning new words for the sake of knowing them but for the purposes of packaging meaning.

Keywords in Study and Comprehension Methods

Keywords and grammatical knowledge are vital to information management

Keywords are an important clue to summarising. Without the knowledge of grammar most students find it difficult to know what the keywords are. A number of students have been told by teachers and tutors that to obtain the skill one must just keep practising and eventually one would get the "feel" for whether a word is a keyword or not. So much of comprehending our educational environment appears to be guesswork in the absence of grammatical knowledge. Grammatical knowledge provides critical thought processes related to information management.

The keywords are nouns and verbs

Keywords are the compulsory words of the sentence, the noun and the verb. Key ideas arise from these keywords in adjectival and adverbial phrases and clauses. For example:

> The Prime Minister of Australia, who is *(at the time of writing this part of the thesis)* presently Paul Keating, is responsible for the current debate on a new flag and a republic.

The sentence can be divided into three models, *thing,* model, *event* model and *circumstance* model

> The Prime Minister, who is presently Paul Keating = *thing* model

The head word of the sentence is "Prime Minister" and the key idea related to Prime Minister, embodied in an adjectival

clause, is "presently Paul Keating"

is responsible = *event* model

The headword or verb is "responsible"

for the current debate on the new flag and republic = *circumstance* model

A circumstance model is made up of additional *thing* models and therefore the keywords are the nouns in each of the additional *thing* models.

Debate, flag, republic are therefore the key words from the *circumstance* model.

The selection of the key words depends on their relevance to the purposes for which they will be used

Therefore, the keywords and key ideas in this sentence are Prime Minister, Keating, responsible, debate, flag and republic. Grammatically these are the keywords and key ideas found in each sentence but, of these, the reader must be selective in making a summary for any specific purpose. Not all key words and key ideas are specifically relevant to every personal application.

Keating – we know he is the Prime Minister[41]

flag

republic

debate

Since Keating is known to the originator and reader of the text for study purposes the ideas of Prime Minister, responsible can be left out due to the learner and reader's prior knowledge[42].

Variations required for different audiences

The above selection of keywords and key ideas would be suitable for anyone wanting to summarise the current issues in Australia. Someone who wanted to summarise the duties of a Prime Minister in general might record the words Prime Minister, responsible, national identity. National identity is an encapsulated expression that includes the flag, republic

41 Keating has been replaced since first writing this item.

42 Since this was written, Keating has been replaced as Prime Minister. Anyone summarising the matter now could no longer depend on readers knowing that Keating was the Prime Minister.

and any other matter of national importance. Thus the knowledge of grammar and vocabulary are extremely important in encapsulating concepts to be programmed into memory.

Searching for encapsulated words requires another look at Cunningham's "can of worms"

In searching for the words that encapsulate several ideas the student must look at the individual words, think about their meanings and how they are related to one another. They are thus looking at Cunningham's can of worms for a combination they might not have considered before, thus their knowledge of significant features of the topic increases.

The content of the paragraph explains selected keywords of topic sentence

If the above sentence is a topic sentence of a paragraph, usually found at the beginning of a paragraph, there will be a more in-depth explanation of selected key words. Later in the paragraph Keating could be introduced, to those not familiar with him, as the present Labor Prime Minister. The degree of his responsibility for the flag and republic debate could be addressed and a short outline of the flag and republic debate could also be included. The slant of one's information requirement determines which of the keywords in the explanatory sentences are to be chosen as a part of the summary relating to the remainder of the paragraph.

Study is all about metalanguaging

As observed in this very brief explanation, from my perspective, study is all about metalanguaging. Our language bears the pattern of how we think and handles concepts that build from these signal networks in order to communicate what we understand.

Metalanguaging can lead to metaeverythingelse

Metalanguaging can lead to: metavocabularybuilding, metasentencing, metaparagraphing which in all is metameaningmaking. It is only as a critical structure is produced that we can seriously modify, remodel and improve the way we think, communicate and listen.

Thinking Metacognition in Study

Study methods seldom address thinking approaches for the topic

Very few study methods address the input and output of thinking approaches related to topics being studied. Most study methods deal with data processing rather than the networking side of using the data. Signal networks, which is knowledge, come from couching concepts in different modes of thinking. Addressing modes of thinking about a concept prepares the student to be able to handle the topic from many different perspectives.

Mechanics of thinking should be addressed by

The mechanics of how people think need to be thoroughly

Thinking Styles

ANALYSE

ISSUE
CONCEPT
TOPIC

Background — Context

Dissect issue into **ideas**

Idea 1 | Idea 2 | Idea 3

For / Against | For / Against | For / Against

Arguments not own, but from **authoritative sources.**

Quantitative Analysis: See which ideas are supported and which are negated

Qualitative Analysis: Look at each of the ideas in relation to each other and see which are pivotal to the issue
Not all ideas are of equal status

See if pivotal ideas have been negated
If no good support then the issue is weak

Relate ourselves and our thinking **to the issue**

COMMENT

STATEMENT
THING
IDEA

Discuss the actual statement

For — Against

Express own **opinion**

Strengths — Weaknesses

Explain step by step in detail why you hold that position
Reasons 1, 2, 3

Conclusion

CRITICISE

THING
STATEMENT
VIEWPOINT

Provide credentials
Seek authoratative views both for and against
State the general trend of opinion

history — Resources to **structure an opinion** — gut feeling

expenence — observation — belief (theory loading)

Strengths — Weaknesses

Quote **examples** of others thinking the same way

Make a **Position Statement**

Explain why that position was taken

EVALUATE

(Decision Making)

STATEMENT, IDEA, THING, PROCEDURE, STRATEGY

From authoratative sources determine **how valid** this is

For — Against

Society — Determine **degree of importance** At this point, discard or continue — Self

Show its value by relating it to applications within environment - personal experience, experimentation

+ve — -ve

Make a **value statement**

Demonstrate the **support of others** for your view eg quotes

Level of support determines the **action**

These thinking styles are not intended to be absolute processes for that thinking style, but a good starting point for those who do not practise thinking effectively.

Figure 10

addressed in the education system. Analysis, evaluation, criticism, comment, discussion, comparing, contrasting, and the difference between opinion and bias are constructs of thinking to which all things that we learn should be applied.

education system

The following tables provide an outline of some of the average thinking processes obtained from recognised good thinkers in the world wide community. Such an outline provides a base upon which each student can develop his/her style of thinking. While the essential elements of a thinking style will be recognisable application or individual preference will modify much of the fine detail of the approach. For example, analysis is the process of addressing the concept, issue or topic by breaking it down into its component ideas, looking at the pros and cons of each idea in the light of authoritative sources and on the basis of the validation of particular ideas some ideas are accepted or rejected and therefore a person develops a particular framework of thinking towards that issue. However, some people may gather a great deal of background to the issue and require an in-depth statement of context and in looking at the pros and cons of the ideas there may be lengthy research procedures in order to validate the ideas while others go into much less detail. Some may have a lengthy process to establish the weight of evidence supporting each idea, others may, in a simplified manner, approximately assess the validity of each idea. Thus thinking styles are subject to a great deal of variation according to outcomes required.

Following tables outline some thinking processes of recognised good thinkers

See plate showing examples of common thinking procedures. These were derived by questioning a number of competent thinkers

Figure 10 Examples of Common Thinking Styles

Having an approximate outline of social[43] thinking processes helps students know how to construct networks of thinking about any subject. Thinking styles assist one to break information up in specific ways in the input mode and then

Outlines of social thinking styles help students construct networks of thinking

43 The thinking styles described here are appropriate for our society, Greek and Latin in origin. Other societies use different styles de Bono's Water Logic is an alternative which is based on a Hebrew style.

help the individual structure the information in specific ways in the output mode. This is generally called "genre". Genre is the style of thinking that is applied to written text. Very few students understand that thinking styles alter the structure of the text we write. Without a knowledge of defined thinking styles, it is difficult to improve one's efficiency in thinking. Definitive styles also assist one to be conscious that we may need to apply several forms of thinking to a single topic in order to gain varying perspectives and insights.

Practical example of looking at a question in different ways

A practical way I use to encourage students to examine different ways of thinking is to restructure a single question that they may find in textbook or past examination papers in as many appropriate thinking styles as they can. For example:

> How dependent were the Egyptians on the flooding of the Nile for their existence?

This question can be changed to:

> Analyse the factors that made the Egyptians dependent on the Nile for their existence.

Or

> Evaluate the effects of the flooding of the Nile for their continuing existence.

Or

> Discuss the effects of the Nile flooding for the continuing existence of the Egyptians.

Or

> Compare and contrast the effects of the flooding of the Nile in ancient times with the lack of flooding today as it relates to the existence of the Egyptian people.

Consequences of examining the same question from different perspectives

Answering the same question from different cognitive perspectives assists the student to:

- Encourage the habit of thinking in more than one frame of mind.
- Assist the student to recognise and practise how thinking

is reflected in various genre.

- Helps the student to gain practise in various thinking styles so that (s)he may anticipate different future output and communication genres.

This prepares the student for answering examination questions, handling assignments and being able to participate in meaningful and in-depth discussions debating issues from various points of view.

Value gained from the technique

A by-product of pursuing a range of thinking styles is motivation. Many of my students after succeeding with this technique have said that previously all they had done to memorise data was to repeat it in the same way over and over again. By placing the information that is being learned into various thinking styles, the student is able to shed new light on old much used and worn out concepts. Learning then becomes an adventure. For, in every topic introduced, the student becomes excited by the prospects of creating new perspectives on what is being presented. The student is able to share new frames of thinking with the class which in itself internalises the information being learned. Students should not be led to believe that what is taught is the ultimate way of thinking about the topic. Students should be made aware that progress in thinking only occurs when we build new insights on old frameworks. This semiotic process is the mechanism by which knowledge progresses in our society and places each and every student as a significant factor and contributor in this development. This provides purpose for every student involved in the educational process and that is to develop better frameworks of thinking that will further enhance the interaction of individuals within the society. As it stands, most students view schooling as the absolute authority on knowledge. The student is purely there to learn but having no ability or opportunity to contribute anything new to that knowledge base. Students need to be encouraged in this adventurous approach and to be made conscious throughout their life that it depends on each person to contribute to the collective web of social thinking. Students should be taught how to float their ideas in public and to listen to the criticism of the framework. Each person needs to learn that multiple views from others either help one to dig more deeply to find the rationale for the framework or it is able to expose anomalies that weaken the framework. Being prepared to be criticised is a virtue few

Using a range of thinking styles motivates even those students who previously thought they could never contribute anything new to learning

people have. Each student needs to understand criticism as a refining process for personal thinking. Applying this process to a number of students has proved to be both an inspiration and a means of exciting motivation in even the most seemingly incapable student. As it stands, the education system does little to demonstrate purpose and position for those who are in it. Instead, the system has the propensity of belittling, discrediting and discouraging real personal thought[44]. It appears that people believe that knowledge is some mysterious thing created by the "bright" people within our community. Only these very special people are able to validly develop knowledge. It almost appears to be our duty to worship these people because of their greatness and humbly learn what they have produced for us. The irony of this situation is that the very great people who have developed knowledge most dramatically have historically been those who have suffered difficulties in their education. For example Einstein, Madame Curie and Edison. (Moore, 1984, p201) These people, having been rejected by the education system, were accustomed to being criticised thus standing outside of their comfort zones. They were prepared to think independently. Much of the new knowledge has been developed by youth in time past. For example Einstein developed his theory or relativity between the ages of 16 and 22 (Clark, 1992, p36, 37). A modern example is Bill Gates the director and founder of Microsoft. He was 14 years of age when he began to develop the new approaches to computing.

Avoiding Error Models

"Old habits die hard" applies to error models

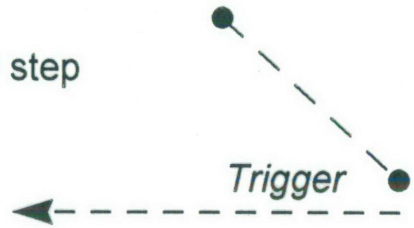
The concept of forming habit is a very old and familiar one. Parents, over centuries, have been concerned that once a person programmed certain habits that those patterns of habit are hard to change. This belief has arisen from observation and yet today in educational circles this factor is often ignored to the detriment of the learner. Whatever we do produces networked cognitive models of thinking. In Cunningham's terminology sign or signal networks are

44 In Clark's doctoral thesis, p21 to 37, there is significant evidence that Einstein was continually harassed in the school system because of his personal thoughts that led his father to say, when Einstein was 16, for his father to tell him "forget his philosophical nonsense and apply himself to a sensible trade." This was necessary in the fact that Einstein had been expelled from his school on the grounds that "your presence in class is disruptive and affects the other students"

New Thinking Pattern

New Response:

- Repeat to self step by step actions of Mother
- Evaluate outcome:
  - Harmful? Yes/No
  - Organisational? Yes/No
  - Act of kindness? Yes/No
  - Love demonstrated? Yes/No

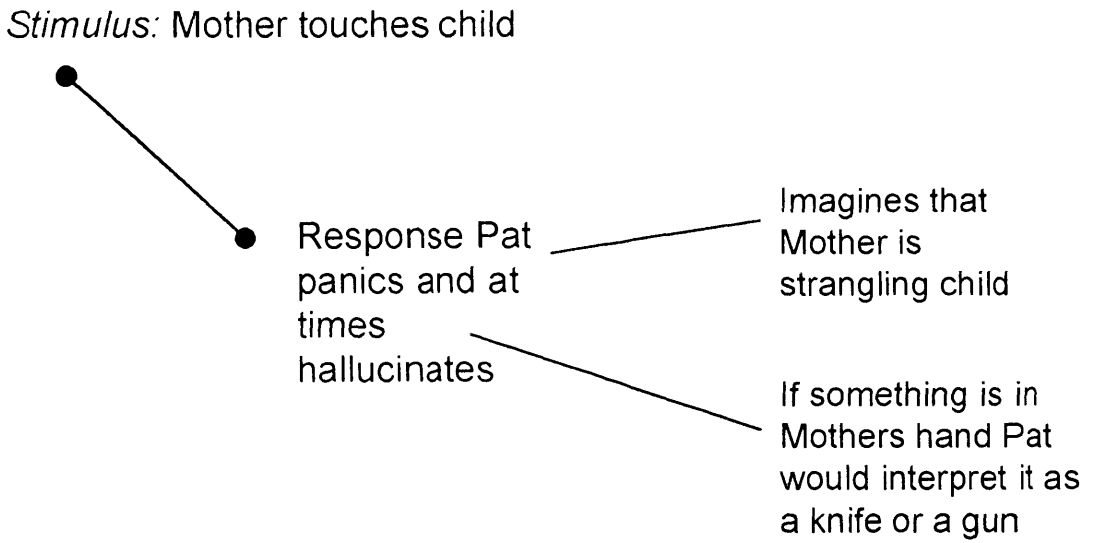


The panic is a trigger for new responses

Figure 11

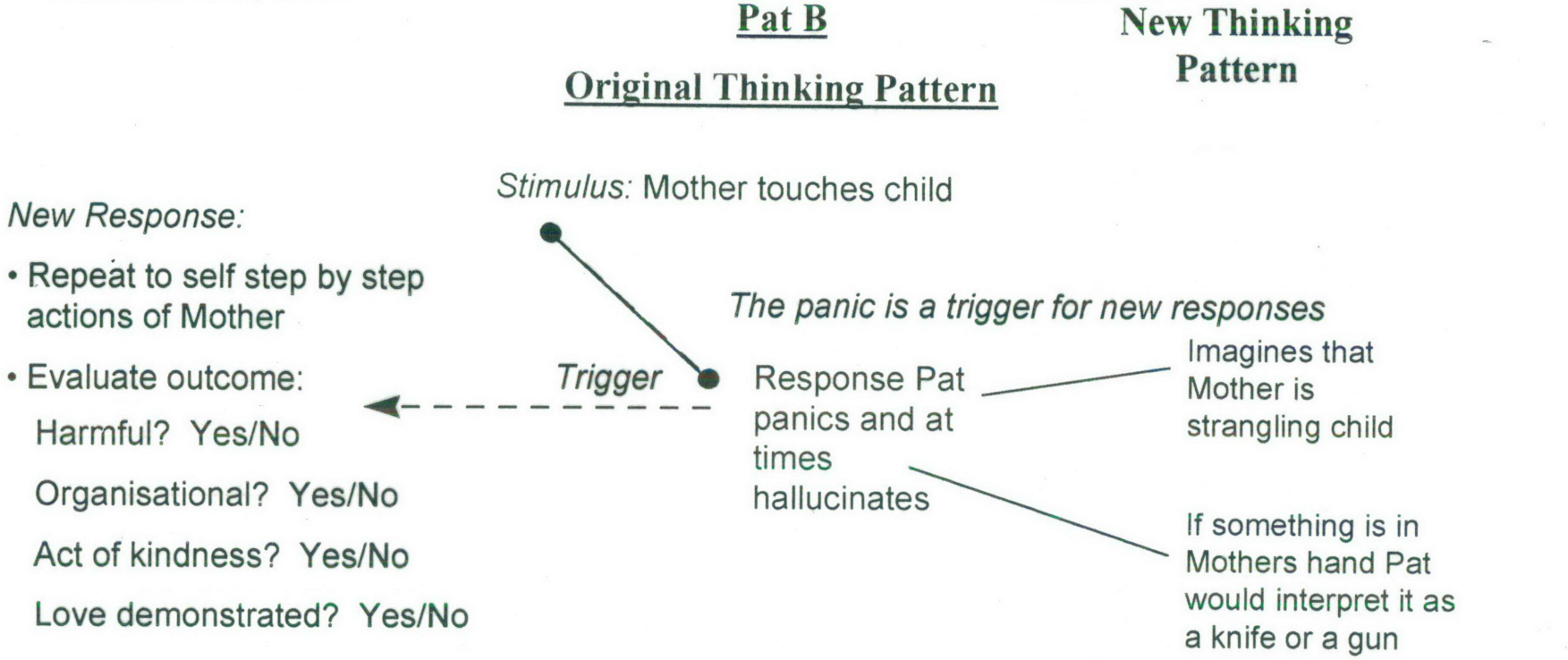
Pat B

Original Thinking Pattern



Pat was referred by a psychotherapist - Pat was forced to observe sisters murder at hand of her Mother. Mother blamed Pat for driving her to it. Pat took the guilt of the act upon herself.

Figure 11



Pat was referred by a psychotherapist - Pat was forced to observe sisters murder at hand of her Mother. Mother blamed Pat for driving her to it. Pat took the guilt of the act upon herself.

Figure 11

formed. From my work with trauma cases, I have found that while new cognitive models may be produced, vestiges of the old model will remain. (Work with Pat B 1990–94, see Figure and Case Studies) In working with a trauma victim, old sign networks are overcome by strengthening the new cognitive model over the old. To do this, an in-depth mapping of the most powerful thought pathways was carried out. Over the old thought pattern, a new, but desired pattern, can be overlaid. In this way, new nodal points of thinking were placed opposite the old. Each time Pat experienced the emotional feelings associated with the old reaction, she would consciously choose to carry out the new reaction. Even though for most of the time Pat was able to achieve the new model, when she faced stressful circumstances she had the tendency to revert to the old mode of thinking. Thus, Pat actually overcame her difficulty but whenever her stress levels were high, or her nervous energy was low, she would invariably revert to the old model of thinking.

Chart of Original Network of Thinking and an Overlay Strategy to use the old signals to create new habits, for Pat B

Figure 11 Original Network of Thinking with Overlay Strategy for Pat B

Error models reappear in stress situations

The point I want to make here by using such an extreme example is the power of error models. Once the error model becomes reinforced, this model keeps reappearing specially under the most stressful situations. Exams are very stressful situations for most students and so it is then that error models are most likely to appear.

Students often learn error models from teachers who do not realise the consequences of their attitudes

In our present educational context, it is easy for students to be developing error models about what is being learned. As a Subject Master at school, I had occasion to observe many teachers at work. Very few teachers understood the process of modelling. Most thought that information was transferred by telling and lecturing. An example was most often worked on the board and then the students were expected to follow the procedures that were quickly demonstrated. Students requiring help would attract comments such as "You must do it for yourself." "If you don't learn to think for yourself now you never will." "If you don't listen the first time don't expect me to explain it again." As a result students would agonise over a problem for hours then in the act create

emotional and functional error models.

Teachers mark errors but follow–up is seldom adequate

When the work was handed in, errors would be crossed with a comment "Do this again." There was seldom follow–up work to assist the student to overcome the difficulty. If there were sufficient number of student in the class with the difficulty the concept would be presented again. If a single student needed help it took the student a great deal of time to arrange with the teacher for an in–depth explanation. In questioning other students whom I help, in most schools, the same situation exists.

Even if students correct their errors the old error models reappear under pressure

If and when the student finally receives help and improves, deeply extended error models will continue to emerge. A great deal more effort must be exerted by the individual to strengthen the new model of thinking over the error model. People who have spent a lifetime exposed to error models will often appear to those endeavouring to help them as if the individual is physiologically mentally incapable as the individual even when taught the new pathways of procedure will almost seem helpless as (s)he frequently reverts to old habits of thinking. With such people, tutors and many professional people excuse themselves when encountering such individuals by stating that the individual does not seem capable of doing whatever the task happened to be. Thus the individual develops another perception error model and believes the problem is entirely with them and the individual believes (s)he is unchangeable.

Error models are difficult to expunge, much better to use scaffolding to prevent them being developed in the first place

To break deeply entrenched error models, the effort required is many times greater than when an individual learns a models correctly for the very first time. It is therefore important that a new approach to education encourages teachers to avoid at all costs the development of error models. This can be avoided by thoroughly scaffolding each student until the model is learned. Each teacher needs to consider themselves as a driving instructor. Will I hand them the keys and ask them to drive away? If this were a car how many of the students would kill themselves? If a teacher does allow a student to figuratively drive away with error models that person is being emotionally killed by degrees. If our society is going to make education compulsory, then the education administrators must also compulsorily be responsible for the emotional and educational well–being of every student. If a student is at risk, arrangements need to be made earlier rather than later, for students to receive appropriate scaffolding either inside or outside the school. Margaret Donaldson author of "Children's Minds" (1978,

Collins, England, p13) states "When we make laws that compel our children to go to school, we assume collectively an awesome responsibility. For a period of some ten years with minor variations from country to country, the children are conscripts and their youth does not alter the seriousness of this fact. Nor is it altered by the intention, however genuine, that the school experience should be for their good. ... Is the school experience really good for our children? ... This amounts to the same thing as asking if it is really good for the society that will come into being when the present one is gone."

Donaldson and Bruner advocate different approaches to avoid school graduates being ill-equipped

Margaret Donaldson is not advocating a de-schooled society but is advocating that different approaches be considered to avoid the outcomes that we presently observe and that is a large number of ill equipped young people in our society (Children's Minds, M. Donaldson, Collins, England, 1978, p15) Margaret Donaldson is supported by Jerome Bruner, a world renowned educational psychologist, who wrote in the foreword of her book "One of the most powerful, wisely balanced and best informed books on the development of the child's mind to have appeared in twenty years. Its implications for education are enormous."

Scaffolding is possible by changing the school's emphasis to cognitive skills, reducing the amount of time spent on information, modelling more and using the resources of home

For such busy teachers, how can scaffolding processes be possible? Instead of packing the courses with information, much more time needs to be given for modelling basic skills and cognitive processes. This means that much more time in class needs to be allocated for modelling activities step by step. For example, a History assignment needs to have modelled in class the research techniques, layout and grammatical presentation. This can be done by carrying out a sample project in class. When each skill has been achieved, a parallel assignment is then given to students to be done for homework. If a particular student needs extra help, parents need to be informed to seek outside school help earlier to avoid error models. Much more networking needs to occur between home, school and outside help to achieve a satisfactory outcome. At present so much effort is expended by individuals within the education system discrediting the work of many competent educationalists working independently. Such people are vitally needed to assist and scaffold the students and teachers in the education system. By enlisting immediate help the educational difficulties encountered by students today may not reach the seriousness they presently do.

Schools should work

In a new approach to education, teachers must be aware of

with parents who can provide resources not available at school

the power of the home in educating and tapping resources that are not possible to obtain in the school system itself. Parents, due to the bonded concern for their children, are prepared to provide financial resources to provide specialised help that the school could not afford. At present, schools often do themselves a disservice by endeavouring to be all things to all people and doing a lot of it poorly.

Schools should not regard themselves as failures merely because of the deficiences of mass education

Most schools are reticent to recommend their students for outside professional help as it appears that the school has failed. However, teachers and other school educators need to become aware that it is not an admission of personal failure but is the recognition of the limitations of a mass education system. The greater failure on the part of school teachers and administrators is firstly the lack of perceived understanding of mass education limitations and in being defensive of this poorly understood fact becoming complacent about the individual needs of students. It is the lack of understanding of the limitations of mass education that is presently their failure.

Teachers need to become well equipped to diagnose cognitive deficiencies

In understanding school limitations, teachers must be better equipped to diagnose difficulties within the classroom so that immediate attention can be recommended. Each teacher needs a greater understanding of cognitive skill development in providing academic success within each student. A teacher needs to spend more time equipping students cognitively rather than disseminating useless information. Seeking information is the role of the student after having achieved the tools with which to pursue it. Along with cognitive development, language is a high priority in teaching as languaging is the basis of enhanced cognition. Through more effective home–school and independent educator network the entire education system could be effective and a vibrant professional industry.

Society should accept the limitations of mass education and use other organisations for extras

Mass education in recent times has fallen into disrepute for the reason that the state has not placed a statement of limitation on their service. Our taxes for education are basically designed to support a system of education for individuals who cope with educational procedures. Unfortunately, the government has not made it clear where the boundary must be drawn but continually tries to extend their services on a fee that is inadequate for the task. Take for example a health fund. Each person pays his/her premium but a clear boundary is drawn as to what is covered and what is not. Our educational taxes are such a premium but, however, as the boundaries are not drawn the

system appears to fail when the populace demands remediation services beyond the scope of the taxes.

Chapter Conclusion

The concept of a cognitive emphasis in learning is such a new concept to many teachers that it is difficult for them to imagine what the structure of their teaching would be like. For most teachers, it is terrifying for them to consider that they may now be accountable for the practical development of all students instead of being able to blame the lack of ability for student failures. In practising this new approach, the teacher is more likely to work on a master-apprentice relationship basis. The teacher would have a closer relationship with each individual in class and would teach by modelling work practises in front of the students . These work practices would relate to thinking rather than just manipulation of information. Teaching cognition leads to a more active and focussed classroom because virtually all students will be **able** to perform the tasks required by the teacher. At present, much student activity is non-productive because students and teachers alike, and many parents too, consider the work too difficult for a reasonable number of students. School work is often dismissed as being impractical when the real reason for student disinterest is often the fact that teachers, trying to provide work "within the capabilities" of students provide such a watered-down version that the challenge of relevance is seriously diminished. Both of these causes of unproductive activity will be greatly diminished as the focus of the class is now the skills of enabling performance. Students who are gifted will benefit too, they will be able to pursue more in-depth research as the information is only the vehicle of their thinking practice. Teachers would set assignments on thinking and cognition and the students would choose the depth at which they will pursue the topic and subject. Classroom behaviour, even the current trend seen in Australia and USA of violence could be influenced for the better.