

APPENDIX C

ANALYSIS OF TRANSCRIPTS

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Coral

PREAMBLE

Coral works as a residential care officer with the Queensland Department of Family Services, Aboriginal and Islander Affairs. Her work entails writing and implementing instructional programs for people with multiple disabilities. Coral is between 40 and 45 years of age looking to improve her work status. To help, she completed an external Arts Degree, when during her studies, experienced learning breakthrough.

Her studies required large amounts of information to be remembered and retained for answering exam questions. In the process of committing the information to memory, Coral discovered a method of using acronyms to assist memory.

LEARNING BREAKTHROUGH EXPERIENCE

Coral's learning breakthrough was being able to remember masses of information for answering exam questions. Coral's learning breakthrough was demonstrated through the application of an intellectual skill or rule. Coral used a rule for applying acronyms to remember masses of course study information and then to retrieve that information to succeed at exams with distinction.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Coral experienced the phenomenon was:

- 1 **formal studies.** She was enrolled as an external student in an Arts degree program. Her situation was independent learning.
 - "I decided that I was going to do this Arts degree... (Coral informed me prior to our interview that she was enrolled in an external program.)"

2 disappointment with her performance. She was emotionally stirred at the sudden realisation of the enormity of the task and her inability to cope. It was in this current of feeling that Coral developed her skill.

- "...when I got the first lot of information, because it had been twenty odd years since I had been at school, I looked at it and I freaked. There was so much information that I had to retain.

I found that I could not retain... like if I had two subjects, if I had to recall all the information that was necessary for the exam I just could not retain that much information."

- "[I felt] useless. Like giving up which I nearly did in the first twelve months."
- "I only got passes in the first semester, but, my assignment work was quite good they were credits, but the exams were dropping me back. Overall the exams pulled me back to only passes."

3 a temporary loss of skill where she could not muster her intellectual capacity for academic study. It resulted from being away from study for twenty odd years. Coral acted to develop a new skill for study because the skill that she possessed at school had regressed.

- "...it had been twenty odd years since I had been at school, I looked at it and freaked."

4 being unsure. She was achieving at a lower level with exams compared with assignments. This caused Coral to become apprehensive and experience feelings of inadequacy causing a tentativeness when applying her system in a risk situation.

- "I only got passes in the first semester, but, my assignment work was quite good they were credits. The exams were dropping me back. Overall the exams pulled me back to only passes."

- "When it first happened I wasn't sure that it would work.

I didn't try any other methods other than this one; only to try and recall the whole lot of the information."

5 cognitive. Her experience was with cognitive activity to retrieve memorised study material.

- "I read the book right through and I recalled that piece of information later on. It must have been one specific area that it applied to really easily. I can't remember which, but, I found that...it must have been while I was reading something and I thought: 'Yeah, that would suit that', and there-after I used that system. But I can't remember what it was.

I was reading my study information when it all came together. I was reading the study information and I was trying to work out how I could remember all the information. I recalled having read about that system and I thought that it would apply really easily to this and so I did apply it to that. I found that it was really easy to recall that information. So then I used it there-after and I've been using it ever since."

6 irrelevancy. The study material was not practical. Coral was unable to apply the information in a practical way. This made it hard for Coral to internalise new information.

- "In normal daily life I would not have come across that sort of thing (study material). I don't even apply that sort of information now at work. It is not until you are in the higher levels of the department that you would need that sort of information."
- "There is something else too. I remember them specifically for exams and then if I'm not applying them in the workplace I wipe it and then next semester I remember the next lot."
- "It is dissimilar to everyday learning because if I have to learn something that I need to use every day, then, I learnt it and remember it because it becomes routine."

Coral experienced the phenomenon as:

1 a change in the way she processed material that was not able to be put to practical use.

- "I had to recall all the information that was necessary for the exam I just could not retain that much information.

[I felt] useless. Like giving up which I nearly did in the first twelve months. That was why it was essential for me to figure out some way of retaining that information in order to breed success to keep going."

- "I only got passes in the first semester, but, my assignment work was quite good they were credits, but the exams were dropping me back. Overall the exams pulled me back to only passes. So that was why in second semester I had to work out a way of getting the information retained. Over the five year period of my study, things got better because I came out last year with two distinctions. It has gradually got better."
- "[At exam time I felt] elated because I put all that information down on the exam paper where-as before I would finish a three hour exam in one and knew that I didn't write enough. To be able to achieve and get that amount of information - to retain it long enough to get it down - was a real achievement."
- "In normal daily life I would not have come across that sort of thing (study material). I don't even apply that sort of information now at work. It is not until you are in the higher levels of the department that you would need that sort of information."
- "Something like BA or BAADI or something, but, even if it is like that for some reason, because I've really concentrated on the key words, I can still recall them even if it is not a word that makes sense. If I can't get a pictorial image I can visualise the letters because I've concentrated on getting those letters into the brain."
- "If I apply it, it stays as a part of me.

I read the book right through and I recalled that piece of information later on. It must have been one specific area that it applied to really easily. I can't remember which, but, I found that...it must have been while I was reading something and I thought: "Yeah, that would suit that", and there-after I used that system. But I can't remember what it was."

- "One of the words that I used yesterday was ARADAE. I couldn't relate that to anything, but I could remember it."

- "[After the breakthrough Coral has found that] sometimes at work I would write up programs or what-ever...I've written up some submissions in the last couple of months and I'll be doing that and think: 'Oh, yes I remember that' where previously I would just put it to the back burner because I wasn't applying it."
- "I was trying to recall the whole lot off-pat. I found that I could not retain...like if I had two subjects, if I had to recall all the information that was necessary for the exam I just could not retain that much information."
- "I found that associating a word beginning with the first letter of the key words in that area I just found it so easy. So then, because I could recall that key word, I had the first letter of each one of those key words. From there, I found it easy to remember the whole section."

2 a change in her self-concept to be more self-assured during exams.

- "When it first happened I wasn't sure that it would work. But I thought that I would give this a go and it was when I came to exam time that I was asked a question that I had thought: 'Boy, I'll never remember all that', but I applied the system on my scribble paper and it was so easy to write off and I thought: 'Wow, this is the way to do it!'"
- "[At exam time I felt] elated because I put all that information down on the exam paper where-as before I would finish a three hour exam in one and knew that I didn't write enough. To be able to achieve and get that amount of information - to retain it long enough to get it down - was a real achievement."
- "'Yeah, that would suit that', and I there-after I used that system. I found that it was really easy to recall that information. So then I used it there-after and I've been using it ever since."

4 a motivation to keep using the method.

- "When it first happened I wasn't sure that it would work. But I thought that I would give this a go and it was when I came to exam time that I was asked a question that I had thought: 'Boy, I'll never remember all that', but I applied the system on my scribble paper and it was so easy to write off and I thought: 'Wow, this is the way to do it!'"
- "Sometimes at work I would write up programs or what-ever...I've written up some submissions in the last couple of months and I'll be doing that and think: 'Oh, yes I remember that' where previously I would just put it to the back burner because I wasn't applying it."

What is seen as contributing to the phenomenon is:

1 ineffective study methods that created the opportunity to learn a system for memorising and recalling masses of information.

- "I was trying to recall the whole lot off-pat. I found that I could not retain...like if I had two subjects, if I had to recall all the information that was necessary for the exam I just could not retain that much information."
- "I was having difficulty during the first six months and during the second six I realised that I had to work out a system for retaining information. There was just so much for me to remember."

2 a readiness to learn after she received poor exam results. She knew from experience that she had ability to achieve at a higher grade. Discontented, she searched for a solution.

- "I only got passes in the first semester, but, my assignment work was quite good they were credits, but the exams were dropping me back. Overall the exams pulled me back to only passes. So that was why in second semester I had to work out a way of getting the information retained."
- "...what I set out to do was to try and find out some information on it. I read those page-a-minute memory books etc, and in one of the books I picked up a similar thing to the system I now use.

I realised that I had to work out a system for retaining information. There was just so much for me to remember."

3 redirection of energy. Instead of study, Coral put effort into perfecting the system to aid her study.

- "I found that I could not retain. Like if I had two subjects, if I had to recall all the information that was necessary for the exam I just could not retain that much information. That was why it was essential for me to figure out some way of retaining that information in order to breed success to keep going.
- "So that was why in second semester I had to work out a way of getting the information retained. Over the five year period of my study, things got better because I came out last year with two distinctions. It has gradually got better."

4 being decisive in acting and not procrastinating. Coral, of her own volition, developed a positive attitude toward study. Being pro-active was Coral's way of dispelling frustration and moving to create a situation in which success was possible.

- So what I set out to do was to try and find out some information on it."
- I was reading my study information when it all came together. I was reading the study information and I was trying to work out how I could remember all the information. I recalled having read about that system and I thought that it would apply really easily to this and so I did apply it to that. I found that it was really easy to recall that information. So then I used it there-after and I've been using it ever since."
- "When it first happened I wasn't sure that it would work. But I thought that I would give this a go and it was when I came to exam time that I was asked a question that I had thought: 'Boy, I'll never remember all that', but I applied the system on my scribble paper and it was so easy to write off and I thought: 'Wow, this is the way to do it!'"

5 knowledge of the system used for recalling information. The knowledge of the system was a prerequisite for learning to use the system.

- "I read the book right through and I recalled that piece of information later on.
- "I read those page-a-minute memory books etc, and in one of the books I picked up a similar thing to the system I now use. In that it said that in order to retain a series of information, if you can pick up a key word in each little section and with the first letter of that key word make a word that will stick in your memory then you can recall that information quite easily. That is the way I've done it."
- "I was having difficulty during the first six months and during the second six I realised that I had to work out a system for retaining information. There was just so much for me to remember."

- "I was reading my study information when it all came together. I was reading the study information and I was trying to work out how I could remember all the information. I recalled having read about that system and I thought that it would apply really easily to this and so I did apply it to that. I found that it was really easy to recall that information. So then I used it there-after and I've been using it ever since."

6 generalisation to simplify material to be remembered. Coral used key words which represented a relationship with study material. Key words reduced the volume of information rendering study material more manageable.

- "I found that associating a word beginning with the first letter of the key words in that area I just found it so easy. So then, because I could recall that key word, I had the first letter of each one of those key words. From there, I found it easy to remember the whole section."
- "[I don't only apply it to exams because it is the same as the KISS principle. When we are in a communications thing at work if someone said: 'How do you do this communication?' at one instance I said KISS principle. They all looked at me as if I was daft because I had interpreted it as Keep It Simple Stupid to a bunch of carers of disabled people. When I went home I thought about it and tried to remember why I had said that? what was it? and I remembered later it is supposed to be Keep It Short and Simple. I thought that I must have said something wrong, but I couldn't think of what it was. "

7 memorising study material. Having internalised the information, Coral was successful to become confident in the use of her system. Memory was the source of material for retrieving.

- "There is something else too. I remember them (study material) specifically for exams and then if I'm not applying them in the work place I wipe it and then next semester I remember the next lot."
- "I had put [study material] aside, but, prior to exams I would have made sure that I did have that information all restored because I realised that it was essential to have it for exams."
- "[When I read] I can picture the...unless they have to be in order then that is not the way I learn them. The way I learn them is to pick out the first letter of the key words. I put them down and I make some sort of word or phrase out of them. I can in turn match it (key word) to that particular thing (study information). So that there is a pictorial image of that thing (acronym) up there and that is why it is so easy to remember that work and to take the key words from that."
- "When I receive my exam and scribble paper, I write down a word like that on my scribble paper and I fill in the key words and then I find it easy to fill in the words either side to complete my exam paper."
- "I learnt the [study information] from my study materials and it has just happened now that you've put me on the spot and you are making me recall it because I had put it aside, but, prior to exams I would have made sure that I did have that information all stored from the back (pointing to the back of her head) because I realised that it was essential to have it for exams."

8 memorising key words which associate to the information to be retrieved.

- "I've really concentrated on the key words, I can still recall them even if it is not a word that makes sense. If I can't get a pictorial image I can visualise the letters because I've concentrated on getting those letters into the brain. Like I said I can't even remember what that BAADF is. I've got no idea, but, I can recall those letters. They were to do with something way back, but, I can see those letters as plain as day, but I've got no idea of what they represent."

9 **classifying** a series of key words in context through the use of acronyms. The acronyms formed the context in which the information was presented in the study material and eventually retrieved. This is abstract thinking and the act of classifying is a defined concept in terms of intellectual skills.

- "There is the term RACE which is Research Action ??? something and Evaluation. I have trouble recalling it. It is in the social sciences in social research. I write the word RACE vertically and then on my scribble paper I put Research Action Coordination Evaluation. Then to put it onto the exam paper, if that was the question, I would proceed to explain research in full."
- "I can in turn match it to that particular thing. So that there is a pictorial image of that thing up there and that is why it is so easy to remember that work and to take the key words from that."
- "It particularly applies to where you've got...like cause and effect things where you have ten or twelve different reasons or principles or guidelines or whatever that you have to recall."
- "It is rather abstract because the words have no tangible meaning. I would say that it is abstract because I tend to use those (acronyms) where I have multiple amounts of information that I must recall during exams."
- "I found that associating a word beginning with the first letter of the key words in that area I just found it so easy. So then, because I could recall that key word, I had the first letter of each one of those key words. From there, I found it easy to remember the whole section.
Because it suited me and because I've been able to work on that basis ever since."
- "So that there is a pictorial image of that thing (acronym) up there and that is why it is so easy to remember that work and to take the key words from that."

10 **a cognitive strategy** of associating letters to key words. Association was similar to a system for marking keys to remember which door a key would open.

- "In that, it (the book describing the study method) said that in order to retain a series of information, if you can pick up a key word in each little section and with the first letter of that key word make a word that will stick in your memory then you can recall that information quite easily. That is the way I've done it."
- "I found that associating a word beginning with the first letter of the key words in that area I just found it so easy. So then, because I could recall that key word, I had the first letter of each one of those key words. From there, I found it easy to remember the whole section."
- "I put them down (acronyms) and I make some sort of word or phrase out of them. I can in turn match it to that particular thing."
- "By having put the letters down of the key words I then write the key words and when I go to put that on the exam paper I don't have a problem transcribing that key word into that sentence or whatever I have to do."
- "The way I learn them is to I pick out the first letter of the key words. I put them down and I make some sort of word or phrase out of them. I can in turn match it to that particular thing. So that there is a pictorial image of that thing up there and that is why it is so easy to remember that work and to take the key words from that."
- "There is the term RACE which is Research Action ??? and Evaluation. I have trouble recalling it. It is in the social sciences in social research. I write the word RACE vertically and then on my scribble paper I put Research Action Coordination Evaluation. Then to put it onto the exam paper, if that was the question, I would proceed to explain research in full."

- "The whole sentence just relates to the key word. It is the key word in the sentence and the sentence relates to the word. [My answer] may be in precis form to what it was in the study guide, but, as long as I am getting that key information I'm happy. My objective is to get the key word and to make sure that I miss none of those key points. The whole structure of the sentence originally relates particularly to that key word."

11 the pronunciation of words that were made from non-sense letters. Coral formed the rhyme sound which helped remember acronyms through rote learning. Coral made a word sound out of the letters from key words when a known word was not adaptable. Pronouncing words in rhyme form was part of her method for committing acronyms to memory.

- "One of the words that I used yesterday (during an exam) was 'ARADAE'. I couldn't relate that to anything, but I could remember it. I tend to make a word out of it. Sometimes I can't. When that happens I just see the letters. Maybe I do subconsciously make a word out of the letters even though they don't make sense. Thinking about the ones that I used yesterday, I think that I do make a word out of them. The word doesn't have to make sense or be realistic."
- "Like I said I can't even remember what that BAADF is. I've got no idea, but, I can recall those letters. They were to do with something way back, but, I can see those letters as plain as day, but I've got no idea of what they represent."

12 an image of the acronym when written. Visual encoding helped to commit letters/acronyms to memory. In addition, by writing the acronym at exam time prompted Coral's memory helping the retrieval process.

- "I suppose I retain visual information more easily than other methods. I would acknowledge it quicker. Written information you would have to go over it a few times to be able to associate a visual image with it "
- "[When I read] I can picture the...unless they have to be in order then that is not the way I learn them. The way I learn them is to pick out the first letter of the key words. I put them down and I make some sort of word or phrase out of them. I can in turn match it (key word) to that particular thing (study information)."
- "One of the words that I used yesterday (during an exam) was 'ARADAE'. I couldn't relate that to anything, but I could remember it."
- "I would start writing it and it would come back." (NOTE: This is from the group response)
- "[I can almost always make a word out of the first letter of key words.] Sometimes it doesn't make sense. If I am able to, unless it has to go in a specific order, I am generally able to. Sometimes it is like BA or BAADF or something, but, even if it is like that for some reason, because I've really concentrated on the key words, I can still recall them even if it is not a word that makes sense. If I can't get a pictorial image I can visualise the letters because I've concentrated on getting those letters into the brain. Like I said I can't even remember what that BAADF is. I've got no idea, but, I can recall those letters. They were to do with something way back, but, I can see those letters as plain as day, but I've got no idea of what they represent. It is rather abstract because the words have no tangible meaning..."
- "By having put the letters down of the key words I then write the key words and when I go to put that on the exam paper I don't have a problem transcribing that key word into that sentence or whatever I have to do."

- When I receive my exam and scribble paper, I write down a word like that on my scribble paper and I fill in the key word and then I find it easy to fill in the words either side to complete my exam paper.

13 experimentation where Cora used the study method on a convenient situation before using it in an exam situation. This activity created a rule for the use of the acronym system.

- "I was reading my study information when it all came together. I was reading the study information and I was trying to work out how I could remember all the information. I recalled having read about that system and I thought that it would apply really easily to this and so I did apply it to that. I found that it was really easy to recall that information. So then I used it there-after and I've been using it ever since."
- "It must have been one specific area that it applied to really easily. I can't remember which, but, I found that...it must have been while I was reading something and I thought: 'Yeah, that would suit that', and there-after I used that system. But I can't remember what it was."

14 climate of feeling that there existed a potential for success. Coral was motivated to trial the system on exams (risky situation).

- "Over the five year period of my study, things got better because I came out last year with two distinctions. It has gradually got better."
- "When it first happened I wasn't sure that it would work. But I thought that I would give this a go and it was when I came to exam time that I was asked a question that I had thought: 'Boy, I'll never remember all that', but I applied the system on my scribble paper and it was so easy to write off and I thought: 'Wow, this is the way to do it!'"

15 challenge to use the system on exam questions in exam conditions. The stimulation from the challenge of a real test lifted Coral's excitement level. Having succeeded at a time of such stimulation created a sensation of confidence to, arguably, embed the event in memory as her breakthrough experience.

- "When I receive my exam and scribble paper, I write down a word like that on my scribble paper and I fill in the key words and then I find it easy to fill in the words either side to complete my exam paper."
- "By having put the letters down of the key words I then write the key words and when I go to put that on the exam paper I don't have a problem transcribing that key word into that sentence or whatever I have to do."
- "When it first happened I wasn't sure that it would work. But I thought that I would give this a go and it was when I came to exam time that I was asked a question that I had thought: 'Boy, I'll never remember all that', but I applied the system on my scribble paper and it was so easy to write off and I thought: 'Wow, this is the way to do it!'"
- "It is dissimilar to everyday learning because if I have to learn something that I need to use every day, then, I learnt it and remember it because it becomes routine. If I have to learn a series of information that I have to recall in exam that is why I use an acronym. It doesn't necessarily have a concrete form because I can use those letters as how I recall that information. I did it about twenty times yesterday in an exam. It was very theoretical stuff."
- "In that it said that in order to retain a series of information, if you can pick up a key word in each little section and with the first letter of that key word make a word that will stick in your memory then you can recall that information quite easily. That is the way I've done it."

RESEARCHER'S OBSERVATIONS AND COMMENTS

When Coral was initially approached and breakthrough was described, she immediately remembered her experience of recalling masses of information for answering exam questions. There was no hesitation, she related to the moment of elation at suddenly realising her achievement.

Coral seemed ambitious. She wanted to have her say and needed the qualification to go further through promotion within the department.

Motivation was not particularly mentioned, but, her goal is seen to provide the motivation to go on when difficulties arose, for example., after having received low marks from exam assessment.

The main contribution that Coral's experience has for Adult Education is that she chose a method of mnemonics to overcome low marks which was compatible with her preferred verbal way of learning; as she said: "...it suited me and because I've been able to work on that basis ever since."

Coral seemed to be the sort of lady who could be head strong with a determination to succeed. Success in this instance was with exam results not knowledge. Her approach to study was simple and straight forward. She manipulated the purity of academia of gaining higher skills and acquiring knowledge for social status and job promotion.

Gary

PREAMBLE

Gary is a 45 to 50 year old high school teacher with an avid interest in politics, in particular economic rationalist policy. He will debate the subject as well as listen to political news broadcasts and read news paper articles. Over time he has developed his own views on the subject and seeks continually, to refine and build his theory of economic rationalism. The pursuit of this better theory is the subject of Gary's learning breakthrough experience.

Where he experienced the breakthrough was a sports oval. He enjoys jogging for relaxation and fitness providing him with a diversion from the pressures experienced from day to day. It was during a jogging session that he experienced a breakthrough with his theory.

LEARNING BREAKTHROUGH EXPERIENCE

Gary's breakthrough was learning to restructure his understanding of economic rationalism to accommodate previously contradictory information and ideas from economic news reports.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Gary experienced the phenomenon was:

- 1 **an informal** situation where he pursued a casual environment for learning. He was jogging around a school sports oval.
 - "I do a lot of jogging by the way and I am a reasonably keen jogger when I get the opportunity, but, some of my best thinking and realising answers comes when I am actually running around an oval. I can fit the bits and pieces together better running around and thinking about it."
 - "I can be reading a news paper and I can see these political events evolving with the result that they annoy and upset me to the point where I'll put on my joggers and my shorts and I will burn it off jogging. That is the sort of thing that gets me going."

2 a pre-occupied state of mind. It was, in a sense, day dreaming about a matter of interest or concern.

- "It is not as if I turn around and say: 'I'm going to think about this now.' I don't have that ability to turn on and off. If something pre-occupies me, and this is where I think the breakthrough comes, it is that something which pre-occupies me and that it is not a chore. To start, it is what you want to do. So it is a totally relaxed state."
- "I'm more or less completely out of it and I'm thinking about the whole thing. It is almost like anger induced sometimes. It is an emotional thing."

I'm quite aware that I'm jogging and where I am and what I'm doing. I know that I am getting my exercise at the same time and that I'm burning off the things out of my system. I also play squash and those sorts of things. When I'm playing squash it is a different set up because I'm playing competitively and there is no way in the world any of these things penetrate. I just play squash. It is total concentration. When you're jogging you can think."

3 cognitive not physical where he learnt to conceptualise information forming a structure in which to understand economic rationalist theory.

- "I was trying to build an understanding of the processes involved as well as coming up with a logically consistent argument about this economic theory. I am the sort of person that spends a lot of time walking around and thinking about these things."
- "Now you don't always find the answers, but it is probably building some sort of structure for you when you do get the pieces that link it together."

4 in developing his own personal theory not necessarily for other people.

- "I would not turn around and jot it down on paper. Although, sometimes when these things happen I feel I should jot it down and keep a record of it. I generally don't."
- "My motive, when I do this, is not to come up with the idea which will set us up. It is really just the idea of a breakthrough in getting the thing together. It is a discussion thing and I suppose that you could say that what happens is that it modifies your original viewpoint slightly. It allows you to move on to another. It might be two steps forward and one step back. You never get the total picture. I can't say that I've made the breakthrough and I know it thoroughly. What I guess it does, is to build in you something which is against the learning process. You end up with a gut feeling that...things that you come across a little later should fit into this thing and if they aren't fitting into your theory you believe that you have missed something."

Now I feel that if things are not coming in congruence or whatever with my theory then either the theory is wrong or there is something missing. When you get involved with it as I do you probably come to the view that there is just something here that doesn't gel. It is like listening to John Howard's industrial relations policy and you're going to have all these rights and then finally he gets pressured on television and you say: 'Well yes I now know what it is all about.' Quite often your original gut feeling is right, or you think it is OK. The danger is that you can continue going along the wrong path modifying it and when you are talking about major breakthroughs maybe that is when you get completely up a dead gully and it becomes quite clear that that is not the correct answer. You then must move off somewhere else.

I like to pursue what I believe is the truth of something as much as anyone can pursue truth and it is the pursuit of that that I believe is the essence of education."

5 during a time of anxiety. Gary was stirred by news that he heard and read. These feelings caused him to be anxious about his theory which was shown to be inferior.

- "It is almost like anger induced sometimes. It is an emotional thing."
- "Quite often, though, a precursor to that is something that has really stirred me up because, my wife will tell you, I can be reading a news paper and I can see these political events evolving with the result that they annoy and upset me to the point where I'll put on my joggers and my shorts and I will burn it off jogging. That is the sort of thing that gets me going.

What that has done has added another piece for me to chew over and I must digest it and I must rationalise it into my own system."

Gary experienced the phenomenon as:

1 a change in the way he understood economic rationalism. He had developed his personal theory, transforming his perception of economic rationalism enabling Gary to explain more aspects of the theory.

- "I think I got a good grip of it one afternoon when I found that the 'penny dropped'. To me, it was almost like putting a jigsaw puzzle together and all those things that interest you and the things that you try and seek out you find the answers eventually."
- "I believe it [breakthrough] is when you get that step up to a greater understanding of what you have been looking and thinking about. Therefore, you've got some answers to all sorts of questions that may not have been totally related before, but, you can suddenly pick up the relationships."
- "...all of a sudden you've got the key piece to plug it together."
- "My motive, when I do this, is not to come up with the idea which will set us up. It is really just the idea of a breakthrough in getting the thing together. It is a discussion thing and I suppose that you could say that what happens is that it modifies your original viewpoint slightly. It allows you to move on to another. It might be two steps forward and one step back. You never get the total picture. I can't say that I've made the breakthrough and I know it thoroughly."

2 a sudden change.

- "...all of a sudden you've got the key piece to plug it together."

3 a change in consciousness becoming more aware of jogging rather than his pre-occupation with intellectual activity.

- "I'm more or less completely out of it and I'm thinking about the whole thing. It is an emotional thing. I'm quite aware that I'm jogging and where I am and what I'm doing."
- "Putting out of your mind such things as being fatigued or getting tired. Sometimes, when I'm thinking, I forget how many laps I've done."
- "I set myself to do so many laps. The point about it is that you can feel so relaxed from the situation when you reckon that you've thought something through. So I generally finish the

session. It is the clock not so much the laps because in aerobic fitness you need to do at least twenty minutes jogging.

I'm usually quite keen to get home and talk about it."

4 a good feeling of success.

- "No. I set myself to do so many laps. The point about it is that you can feel so relaxed from the situation when you reckon that you've thought something through. So I generally finish the session. It is the clock not so much the laps because in aerobic fitness you need to do at least twenty minutes jogging.

I'm usually quite keen to get home and talk about it.

The feeling is always a feeling of well being of having what I would believe is something worked out. This is sort of a good feeling of success."

What is seen as contributing to the phenomenon is:

1 an instinctive tendency to be drawn into political issues stimulating interest.

- "I think that I have a disposition towards this kind of thing and I am just interested in it."
- "Quite often, though, a precursor to that [pre-occupation] is something that has really stirred me up because, my wife will tell you, I can be reading a news paper and I can see these political events evolving with the result that they annoy and upset me to the point where I'll put on my joggers and my shorts and I will burn it off jogging. That is the sort of thing that gets me going.

What that has done has added another piece for me to chew over and I must digest it and I must rationalise it into my own system."

- "I guess it is not the same as if somebody is working out a problem like a maths problem and suddenly you've got it. This is an area which is continually expanding and of course it's never ending because tomorrow is another day and it is not as if we are in a finite set."

2 previously acquired knowledge as a basis for his theory. Prior knowledge was a prerequisite for selectively perceiving relevant new information.

- "I suppose, that all I can say is, that probably for round about two and a half years I have been a politically active thinker about some of the things [concerning political policy] that have been in news papers, bulletins and keeping my ear to the ground. I am also an avid reader of this stuff. The things that you find confusing you try to fit into a logical structure so that you can see it as being reasonable. I could answer why certain things were the way they appear and how different political philosophies - how the policies come from philosophies - were being put into practice. I try to pick up trends that I could see in the wider community."

3 an emotional stimulation from receiving news conflicting with his own economic views. The emotional factor was a precursor to jogging and the learning situation.

- "Quite often, though, a precursor to that [pre-occupation] is something that has really stirred me up because, my wife will tell you, I can be reading a news paper and I can see these political events evolving with the result that they annoy and upset me to the point where I'll

put on my joggers and my shorts and I will burn it off jogging. That is the sort of thing that gets me going."

- "I'm more or less completely out of it and I'm thinking about the whole thing. It is almost like anger induced sometimes. It is an emotional thing."

4 intellectual stimulation becoming a challenge. Challenge started the cognitive and intellectual processes.

- "Quite often, though, a precursor to that is something that has really stirred me up because, my wife will tell you, I can be reading a news paper and I can see these political events evolving with the result that they annoy and upset me to the point where I'll put on my joggers and my shorts and I will burn it off jogging."
- "So there are breakthroughs and there are breakthroughs and modifications and so on. There are sorts of little battles that you win and then there are major ones."
- "I was trying to build an understanding of the processes involved as well as coming up with a logically consistent argument about this economic theory."

5 habitual behaviour for jogging. Gary relaxed while jogging because (a) he enjoyed it and (b) he justified the time as exercise. There was no guilt plus being occupied through physical activity it created a mentally relaxed condition in which to think.

- "I do a lot of jogging by the way and I am a reasonably keen jogger when I get the opportunity, but, some of my best thinking and realising answers comes when I am actually running around an oval. I can fit the bits and pieces together better running around and thinking about it."
- "I can remember clearly that I was...I might do three or four laps and be chewing it over and one of those times happened fairly recently.

I'm more or less completely out of it and I'm thinking about the whole thing. I'm quite aware that I'm jogging and where I am and what I'm doing. I know that I am getting my exercise at the same time and that I'm burning off the things out of my system."

- "I jog at a reasonably good rate for someone of my age. So I put it in rather than a sort of easy jog. I suppose that if I were to check it out, when I get excited by an idea I'm probably actually running faster. Putting out of your mind such things as being fatigued or getting tired. Sometimes, when I'm thinking, I forget how many laps I've done."
- "It is the clock not so much the laps because in aerobic fitness you need to do at least twenty minutes jogging."
- "I would say the breakthroughs come while I'm jogging and thinking about it while relaxed."
- "I do not need to go jogging to do this kind of thinking. Jogging is probably the best time for me to do my thinking. It is probably because I have other commitments. It is, sort of, my time where I take time out to do it and it is away from interruption. It is not to be an unpleasant exercise."
- "...the breakthrough is when I am actually on the oval."

6 a pre-occupied state of mind rendering a neutral cognitive condition for Gary to focus his thoughts. Pursuit of an enjoyable pastime (jogging) provided the diversion for clear thinking.

- "I think that I have a disposition towards this kind of thing and I am just interested in it. It is not as if I turn around and say: 'I'm going to think about this now.' I don't have that ability to turn on and off. If something pre-occupies me, and this is where I think the breakthrough comes, it is that something which pre-occupies me and that it is not a chore. To start, it is what you want to do. So it is a totally relaxed state."
- "I don't specifically set out to think about something. It is not an actively generated thing. It is an all being (embracing) thing."
- "I think that that is almost a spur pushing to seek it out. I suppose, if you were to look at it, the secret as to what is pressure and what is not pressure as if you had this spur and you want to find out and you want to check it. Well then, you are being pushed from within rather than having a sort of external pressure with someone setting a time table for you to put in an assignment etc."

7 personal space to be free of inhibiting influences. Interruptions were a source of irritation. Irritation was caused by expectant interruptions that is, expect a phone to ring or the likelihood of the children needing help or being noisy. The significance of jogging is that while jogging, Gary's time is his own and it is he who decides when to break concentration rather than someone or something else. This personal space is a characteristic important to Gary for providing solace and contentment in order to work through difficult problems.

- "No [I don't always go jogging i.e. rain hail or shine] as I have said, I do not need to go jogging to do this kind of thinking. Jogging is probably the best time for me to do my thinking. It is probably because I have other commitments. It is, sort of, my time where I take time out to do it and it is away from interruption. It is not to be an unpleasant exercise."
- "It is more of a get away than going there to solve the problem. I don't necessarily go to solve the problem. I'm really saying that it is a relief. A 'detox' style of thing. If I'm sort of sitting here and hear something on the news that I don't like it is almost like the problem is right here with me. So if I go outside or onto the garden I feel released from it. Also, there are no kids talking to me or radios interrupting or TV going or whatever, so it is a sort of get away."

8 an aid to concentration where Gary rehearsed issues audibly. Gary talked to himself to help concentration, in addition to it being part of the rhythm of thinking and jogging - thinking and jogging. For example, talking helped Gary focus on one thing (economic rationalism) while doing another (jogging).

- "I'm quite aware that I'm jogging and where I am and what I'm doing."
- "Sometimes, when I'm thinking, I forget how many laps I've done."
- "When you say talking, I hear it in my own mind. I talk as I would be talking to you now without the sound. There is nothing visual."
- "I guess the reaction to me is that I talk to myself. I do, I talk to myself. You do. You want to say: 'Well this is how it fits etc!'"

- "I talk to myself and it gets me embarrassed at times so that is why I get out into the back yard alone and talk it through.

I am a verbal person and like to learn that way."

9 trance like behaviour. While jogging was the physical environment, the superordinate reaction was total concentration of thought where he cognitively worked clearly through the issues. The notion is that he entered a form of voluntary hypnosis where consciousness was trance like. Attaining a psychological state of cognitive composure was a precursor to the cognitive strategy used to rationalise new information with his theory.

- "I don't specifically set out to think about something. It is not an actively generated thing. It is an all being embracing thing."
- "I'm more or less completely out of it and I'm thinking about the whole thing."
- I am a great believer that the real breakthroughs in humanity probably come from reflection and looking at things.
- "I also play squash and those sorts of things. When I'm playing squash it is a different set up because I'm playing competitively and there is no way in the world any of these things penetrate. I just play squash. It is total concentration. When you're jogging you can think."
- "It is total concentration. When you're jogging you can think."
- "Putting out of your mind such things as being fatigued or getting tired. Sometimes, when I'm thinking, I forget how many laps I've done."

10 a cognitive strategy of inductive reasoning in which to think about new information.

- "[What I am doing is] I'm reasoning. I'm reasoning from a macro point of view to try and see if it fit into a much broader picture. Then you look at the smaller parts later.

[Where the information comes from and who provides the bits on which to reason] is a total thing. I guess you shouldn't do that, but, occasionally you find yourself in a situation with other adults and you get involved in the talk, but you should be doing your work, but if the conversation gets around to politics I am quite prepared to sit and talk about it. I get the bits from the media, talking to people, as well as reading the papers. That is not a chore because I want to read it."

- "I don't know, I could be mis-leading you in something like this, but, it seems to me that you sort of piece things together and all of a sudden you've got the key piece to plug it together. You can sometimes pick things up quickly because you've picked up the key piece early. Sometimes you can just about put the whole thing together and they may be the ones with which you get the most frustrated and then finally you can do the last bit. You actively seek that last bit because you are still looking."

11 an aside rush of energy at the time the breakthrough occurred. The proposition is that a flow of adrenalin increased brain activity which, in turn, increased his capacity to cope with the many processes operating in his mind and body at the time. Interrelating ideas and concepts with his developing theory was said to be instant, but, the energy which emerged at the time seemed to occur over moments

as the realisation of a possible breakthrough taking effect. This rush of energy is arguably a physiological stimulation of mental activity at the instance when the mind was working to put the issues together.

- "So there are breakthroughs and there are breakthroughs and modifications and so on. There are sorts of little battles that you win and then there are major ones. [By major] I mean the ones where you put the things together well. That's a good feeling and it is almost as if you say: 'Right, it's that bit of a bus that stirs you on to want to know more about it!'"
- "I'm more or less completely out of it and I'm thinking about the whole thing. It is almost like anger induced sometimes. It is an emotional thing."
- "I jog at a reasonably good rate for someone of my age. So I put it in rather than a sort of easy jog. I suppose that if I were to check it out, when I get excited by an idea I'm probably actually running faster. Putting out of your mind such things as being fatigued or getting tired. Sometimes, when I'm thinking, I forget how many laps I've done."
- "When you say instant, I am on the verge of breakthrough, but it is not there - and then it is there. I can say that within one step I've suddenly seen a greater amount of the picture. Where as before I had been held up to that point. I had been pondering the problem for some time prior to that. The solution comes very quickly when it comes."

It is hard to pin point the moment that a rush of energy occurs because you are absorbed in what you are thinking. I honestly can't say because I am not monitoring my metabolism."

12 Gary conceptualising new information with that already understood to realise his breakthrough.

- "I was trying to build an understanding of the processes involved as well as coming up with a logically consistent argument about this economic theory."
- "It seems to me that what happened was...I think I got a good grip of it one afternoon when I found that the 'penny dropped'. To me, it was almost like putting a jigsaw puzzle together and all those things that interest you and the things that you try and seek out, you find the answers eventually. Now you don't always find the answers, but it is probably building some sort of structure for you when you do get the pieces that link it together. I believe it [breakthrough] is when you get that step up to a greater understanding of what you have been looking and thinking about. Therefore, you've got some answers to all sorts of questions that may not have been totally related before but, you can suddenly pick up the relationships."
- "What that has done has added another piece for me to chew over and I must digest it and I must rationalise it into my own system."
- "I would say the breakthroughs come while I'm jogging and thinking about it while relaxed. It gets checked later. Whether I go into another phase of thinking about the thing...it is inevitably at that time on the oval that I feel that I have got the grasp of it because that is the time when I feel good about it and suddenly: 'Yes, I see how that fits together now!'"
- "...all of a sudden you've got the key piece to plug it together."

RESEARCHER'S OBSERVATIONS AND COMMENTS

There are some aspects of Gary's story that suggests unusual methods for learning. What is novel is the engagement of physiological aspects with cognitive aspects arguably combining to help him access memory. Jogging and talking to himself tended to annul Gary's inhibiting influences: extrinsically and intrinsically providing the opportunity for him to access his thinking processes. I noticed that Gary was very physically fit. Fitness is an acquired state giving Gary the capacity and a reason for deciding to jog.

Certain skills were predominant. An apparent strategy used to access memory was talking it through to himself and feeling through jogging. He said that he has used the method before, therefore, it may be presumed to be a preferred learning methods he employs to reflect and concentrate. Ability to jog was another, or more to the point, he knew his own preferences for learning.

Interestingly though, vision, imagery, smell, and taste, were not mentioned. An observation is that Gary's preferred method for accessing memory would best be pursued through audio senses and verbal skill, his dominant learning style. When put to Gary during a later interview, he responded agreeing saying that he preferred to debate a subject rather than read about it or write as a means of communication.

His breakthrough was possibly achieved by physiological, emotional and intellectual stimulation. The three areas of stimulation, sets apart, Gary's breakthrough from the other experiences. I found Gary to be a serious person with a real passion for political debate. He gets stirred at the thought of economic rationalism intruding into our society.

In addition, it was noticed that Gary would talk on about various aspects of his experience providing his notions and ideas of what learning is and what learning breakthrough may be seen to represent in terms of his own experiences.

Jack

PREAMBLE

Jack's breakthrough experience was part of his development as a fitter and machinist tradesman. He was in a formal apprenticeship class at the Maryborough College of TAFE when he learnt to weld to a standard required by industry, attributed to experiencing a learning breakthrough.

The classes were part of his mandatory block release training 2nd semester 1992. He was one of a group of apprentices with whom he was familiar. All students were in their first year of apprenticeship.

Jack is aged between 18 and 22 years.

LEARNING BREAKTHROUGH EXPERIENCE

Jack's breakthrough was learning to weld steel plate in the correct way. What changed in the process of learning breakthrough was Jack being able to accept the teacher's way of welding rather than his father's way and then to apply the new skill to his work for (a) gaining distinctions in his apprenticeship exams and (b) solving welding problems back at his work place.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Jack experienced the phenomenon was:

- 1 **practical** hands on learning rather than theory or reading about welding.
 - "Well it would have been a physical experience to begin with because you were physically doing it..."
 - "We had welding twice a week in our apprenticeship course."

2 a 'mind-set based on an old habit where he presumed that a particular method of welding was correct. This fixation delayed Jack acquiring the ability to weld to the required industry level of competency.

- "When I was learning how to weld, I was getting taught at home from my Dad. He is a welder (by trade). Dad has his particular habits and he was passing his habits on to me. I was beginning to weld fairly well and then when I got to college and they said this is the way that you do it my welding finished up looking terrible."

3 formal. Jack was in a practical apprenticeship class at TAFE. A formal class contributed to a disciplined atmosphere for learning at the stage of development when he was dependent on help.

- "We had welding twice a week in our apprenticeship course."
- "When I was learning how to weld, I was getting taught at home from my Dad. He is a welder (by trade). Dad has his particular habits and he was passing his habits on to me. I was beginning to weld fairly well and then when I got to college and they said this is the way that you do it my welding finished up looking terrible."
- "[I got the message] when it was pointed out to me about how much better it was. The teacher said: "You do a run your way and I'll hold your hand and guide you in the way that I think it should be done, then you judge." I compared them and found that his way was better using his technique."

Jack experienced the phenomenon as:

1 a transformed perspective of welding.

- "[I got the message] when it was pointed out to me about how much better it was. The teacher said: "You do a run your way and I'll hold your hand and guide you in the way that I think it should be done, then you judge." I compared them and found that his way was better using his technique."

It got me thinking saying: "Oh shit maybe I should do it this way? This is maybe the best way?". I felt a bit clever and a bit more confident. Confidence boosts you up. I began to think that, well I must be able to do this and I must be able to do this a lot better and I must be able to vertically up weld a lot better using this technique as well."

- "Through learning a better technique from the experience of the teacher [I got better]. Maybe my father had taught me bad habits or that I had picked up bad habits by the way that he was teaching me."

There wasn't any great difference from the way the teacher did it and dad did it. It was only the way that you hold the hand piece and how quickly that you move the hand piece to get the build up of weld.

- "The skill of doing the run and the skill of the way I was to hold the hand piece and then the tricks with the visor and the way that you can actually move your wrist and so forth. That comes with the skill. You start to think: "Well that's good, but I can do better." Then you tend to experiment with different things to improve it. Once you get over that initial hurdle and you're satisfied with that, but want to get over more hurdles you experiment further and get better and better."

2 a change to manipulate equipment intuitively. Jack became proficient, welding to industry standards.

- "It would have been a physical experience to begin with because you were physically doing it, but then it would have been a mental experience after you sort of acquired the skill because you wouldn't have to think about it.

When it becomes second nature you are not physically concentrating, it is in your mind and it just happens - like driving a car

It came about through the mistakes at the start and learning from them. It was a physical learning experience at the start when I discovered that if I did it that way it worked and it is as if your mind says: 'Gee Jack, that is good - you get good results from that and we'll put it in the head and lock it away and then it will become second nature.'

- "The skill of doing the run and the skill of the way I was to hold the hand piece and then the tricks with the visor and the way that you can actually move your wrist and so forth. That comes with the skill. You start to think: "Well that's good, but I can do better." Then you tend to experiment with different things to improve it. Once you get over that initial hurdle and you're satisfied with that, but want to get over more hurdles you experiment further and get better and better."

3 a change in the ease for forming runs and fillets. Learning breakthrough was realising a new skill in which to perform more novel tasks than he could previously achieve.

- "There is always that initial barrier no matter what it is that you are learning and then once you overcome that initial barrier (the highest barrier) the smaller barriers just fall away. Then once that you have fully learnt that, you take on and overcome other barriers at your own will and get better and better."
- "When I got better I came across some small problems with different properties in metals. The smaller problems you seem to overcome quicker than the initial problem because you have that background experience."
- "The improvement of the welding technique happened over a few lessons. In the first lesson, my work was pretty crappy. Then towards the end of that lesson after the teacher had said: 'Do it this way,' it began to improve. You try it and find that it is a little bit better the learning begins. At the beginning you think that he is only a 'dick head' and you're the smart arse, but you go away and think about it plus toy with your way, he comes back as if to think that your trying so he 'hammers it home' and shows you physically, then, once he has done that and you think: 'Well that's good.', you start to do it (his way) and you get better and better and it keeps getting better."
- "He virtually did it for me. Then you sort of remember that he held the rod this way and I was holding it that way. So if I hold it this way and do it that way and experiment with it you sort of acquire your own style. You base it around his style, but you pick up your own style by little tricks and stuff like that."
- "...as you get better you pick up little tricks of the trade. With a welding visor everything is dark and you can't see until you actually strike the ark. When you get good enough you sort of look to strike your ark, close your eyes as you strike the ark then you shut the visor on the helmet all in the one action."

What is seen as contributing to the phenomenon is:

- 1 being content** with the atmosphere at the TAFE college. Jack liked the workshop surroundings making him more inclined to participate in activities.
 - "The work shop was good. I liked it there, it helped."

- 2 familiar** company. He knew his fellow class mates providing an immediate opportunity to interrelate and relax into the tasks and study.
 - "All of the apprentices that were doing college at the same time were from Walkers and everybody knew everybody."

- 3 praise** from the family. This was encouraging.
 - "I still get praise from my parents because they will always praise their kids. As long as they praise you nothing else really counts, no-one actually counts really."

- 4 a motivation** to retaliate after the criticism back at work. Jack became determined to be better than his classmates. The desired consequence was a more industrious attitude toward training.
 - "[I saw help coming] From within myself I suppose, the competitiveness or maybe the influence of not wanting the rubbishing or both."
 - "All of the apprentices that were doing college at the same time were from Walkers and everybody knew everybody. With work mates, if you do a bad job you would get pretty badly rubbished by them. That sort of gets you to persevere on and get better than them."
 - "My goal was to be the best. After all the rubbishing, I wanted to be the very best out of everybody. It made me determined. I was motivated. If someone got a better mark than me then I was determined to beat them next time."
 - "I didn't ever get much respect from work. Walkers are fairly bad for the giving of praise, but I'm still trying to be better. I'm always trying to be better with or without praise. That is the way I look at it."

- 5 an aggressive** trait of his personality that made him alert and eager to learn. It was a precursor to paying attention to instruction and demonstration.
 - "My goal was to be the best."
 - "If someone got a better mark than me then I was determined to beat them next time."
 - "[My help came] from within myself I suppose, the competitiveness or maybe the influence of not wanting the rubbishing or both."
 - "There is probably another thing which effected me and that was the tall poppy syndrome that you tend to get doing things that are seen to be good, but, you become a bit isolated from your mates. There was a few of us that were sort of high and competed with each other. That created rivalry and competition. We would help each other to get along. If you have a competition with someone with whom you are fairly equally matched you both seem to improve. We both get better and better together."

- "I think everybody tries to be the best. It's troubling to your ego if you are not good. Unless you're a 'dead head' and you don't care. Money doesn't matter, it was the thrill of being the best and to skate by saying: 'Well, I'm the best.'. People think that you are knowledgeable. People think that you are wise because you are good at that particular thing.

I think respect is better description. The respect that you get out of it. People respect that you are skilful at your job and that you have a high knowledge of it.

6 receiving attention and respect from teachers. As part of the rivalry with peers, the attention compensated for the isolation Jack perceived from his classmates and the lack of respect thought to come from his place of work. Jack felt justified to concentrate on his goal to be the best. It gave him a composure to study.

- "From within myself I suppose, the competitiveness or maybe the influence of not wanting the rubbishing or both.

Maybe the teachers. Teachers were different. Some favour you more when you are close to the top. They seem to put more time towards you. The teachers gave me the time. They probably thought that: 'He is worthwhile so we'll put our time into him and if he is good enough then we'll help him.' You know if you're continually showing someone how to do it and they continually do it wrong it must be like bashing your head up against a wall. The teacher must get more satisfaction out of teaching a good student.

I had a number of teachers and I did well with all of them.

The work shop was good. I liked it there, it helped. There is probably another thing which effected me and that was the tall poppy syndrome that you tend to get doing things that are seen to be good, but, you become a bit isolated from your mates. There was a few of us that were sort of high and competed with each other. That created rivalry and competition. We would help each other to get along. If you have a competition with someone with whom you are fairly equally matched you both seem to improve. We both get better and better together."

7 a behavioural learning objective in the form of reasonable proof that one technique was superior to another. The behavioural objective provided information on which to discern progress.

- "[He convinced me] by showing me the two ways (his and mine). He said: "You do it your way and I'll show how to do it my way.". He virtually did it for me. Then you sort of remember that he held the rod this way and I was holding it that way. So if I hold it this way and do it that way and experiment with it you sort of acquire your own style. You base it around his style, but you pick up your own style by little tricks and stuff like that."

8 the competency of the teacher. The teacher had a working knowledge of welding which he passed on to Jack via demonstration. Ability of the demonstrator to weld expertly provided the model on which Jack could emulate.

- "[I got the message] when it was pointed out to me about how much better it was [to weld using the new technique]. The teacher said: 'You do a run your way and I'll hold your hand and guide you in the way that I think it should be done, then you judge.' I compared them and found that his way was better using his technique.

It got me thinking saying: 'Oh! shit maybe I should do it this way? This is maybe the best way?'. I felt a bit clever and a bit more confident."

- "Towards the end of that lesson after the teacher had said: 'Do it this way.' it began to improve. You try it and find that it is a little bit better the learning begins. At the beginning you think that he is only a 'dick head' and you're the smart arse, but you go away and think about it plus toy with your way - he comes back as if to think that your trying so he 'hammers it home' and shows you physically, then, once he has done that and you think: 'Well that's good.', you start to do it (his way) and you get better and better and it keeps getting better."

9 gaining Jack's attention to a new technique was the first step in the change process from welding in the old way to the new way. Jack became re-oriented to a goal for using the gear in a better way.

- "When I was learning how to weld, I was getting taught at home from my Dad. He is a welder (by trade). Dad has his particular habits and he was passing his habits on to me. I was beginning to weld fairly well and then when I got to college and they said this is the way that you do it my welding finished up looking terrible.

When I forgot the way Dad taught me and concentrate on the way the teacher taught it wiped the old habits.

I have a problem that when I'm set in my way, what ever anyone else says they're an idiot and I continue my way. Even if it is wrong, if it works for me fine, but, if I think that I can do it better using the teacher's method then I'll persevere even if it is bad to begin with. I'll keep trying."

- "[I got the message] when it was pointed out to me about how much better it was [to weld using the new technique]. The teacher said: 'You do a run your way and I'll hold your hand and guide you in the way that I think it should be done, then you judge.' I compared them and found that his way was better using his technique.

It got me thinking saying: 'Oh! shit maybe I should do it this way? This is maybe the best way?'. I felt a bit clever and a bit more confident."

- "Towards the end of that lesson after the teacher had said: 'Do it this way.' it began to improve. You try it and find that it is a little bit better the learning begins. At the beginning you think that he is only a 'dick head' and you're the smart arse, but you go away and think about it plus toy with your way - he comes back as if to think that your trying so he 'hammers it home' and shows you physically, then, once he has done that and you think: 'Well that's good.', you start to do it (his way) and you get better and better and it keeps getting better."

10 reflection in retrospect to verify the new technique as an improvement on the old technique. Jack used this strategy to establish in his mind which skill to develop.

- "When I was learning how to weld, I was getting taught at home from my Dad. He is a welder (by trade). Dad has his particular habits and he was passing his habits on to me. I was beginning to weld fairly well and then when I got to college and they said this is the way that you do it my welding finished up looking terrible."

- "[He convinced me] by showing me the two ways (his and mine). He said: "You do it your way and I'll show how to do it my way." He virtually did it for me. Then you sort of remember that he held the rod this way and I was holding it that way. So if I hold it this way and do it that way and experiment with it you sort of acquire your own style. You base it around his style, but you pick up your own style by little tricks and stuff like that."

- "Through learning a better technique [my work got better] from the experience of the teacher. Maybe my father had taught me bad habits or that I had picked up bad habits by the way that he was teaching me.

There wasn't any great difference from the way the teacher did it and dad did it. It was only the way that you hold the hand piece and how quickly that you move the hand piece to get the build up of weld."

11 a motor skill to manipulate the operation of the welder hand piece as recommended by the teacher. In changing his grip and using a continuous movement he was able to access the new skill as a consequence of and after learning basic techniques.

- "There wasn't any great difference from the way the teacher did it and dad did it. It was only the way that you hold the hand piece and how quickly that you move the hand piece to get the build up of weld."
- "It came about through the mistakes at the start and learning from them. It was a physical learning experience at the start when I discovered that if I did it that way it worked and it is as if your mind says: 'Gee John, this is good - you get good results from that and we'll put it in the head and lock it away and then it will become second nature.'"

12 getting Jack to trail the new technique. Gradual removal of help allowed Jack to build confidence with the effect, he picked up specific skills.

- "[I got the message] when it was pointed out to me about how much better it was. The teacher said: 'You do a run your way and I'll hold your hand and guide you in the way that I think it should be done, then you judge.' I compared them and found that his way was better using his technique."
- "It got me thinking saying: 'Oh! shit maybe I should do it this way? This is maybe the best way?'"
- "Yeah, I suppose that was a problem too, because as you get better you pick up little tricks of the trade. With a welding visor everything is dark and you can't see until you actually strike the ark. When you get good enough you sort of look to strike your ark, close your eyes as you strike the ark then you shut the visor on the helmet all in the one action.

I wasn't doing that when I was doing a lousy job. I was doing that after I improved and picked up on the tricks."

13 experimentation provided information about sound, smell, visual impression as well as sensing the fine motor coordination of visor, hand piece and the metal being welded. This multi sensing was part of Jack's information processing strategy to reinforce learning.

- "Once you get over that initial hurdle and you're satisfied with that, but want to get over more hurdles you experiment further and get better and better."
- "When I got better I came across some small problems with different properties in metals. The smaller problems you seem to overcome quicker than the initial problem because you have that background experience."
- "[My breakthrough was learning] the skill of doing the run and the skill of the way I was to hold the hand piece and then the tricks with the visor and the way that you can actually move your wrist and so forth. That comes with the skill. You start to think: 'Well that's good, but I can do better.' Then you tend to experiment with different things to improve it. Once you get over that initial hurdle and you're satisfied with that, but want to get over more hurdles you experiment further and get better and better."

14 confidence developed from following a proven course of action from a consequence of an expert model and teacher support and persistence. The result, for Jack, was a sober attitude to learning that caused him to be more inclined to experiment.

- "I felt a bit clever and a bit more confident. Confidence boosts you up. I began to think that, well I must be able to do this and I must be able to do this a lot better and I must be able to vertically up weld a lot better using this technique as well. You don't think 'what if' if the 'what if' comes up and you don't do it the new way."
- "You start to think: 'Well that's good, but I can do better.' Then you tend to experiment with different things to improve it."
- "At the beginning you think that he is only a 'dick head' and you're the smart arse, but you go away and think about it plus top with your way, he comes back as if to think that your trying so he 'hammers it home' and shows you physically, then, once he has done that and you think: 'Well that's good.', you start to do it (his way) and you get better and better and it keeps getting better."

By showing me the two ways (his and mine). He said: "You do it your way and I'll show how to do it my way."

- "With a welding visor everything is dark and you can't see until you actually strike the ark. When you get good enough you sort of look to strike your ark, close your eyes as you strike the ark then you shut the visor on the helmet all in the one action."
- "I wasn't doing that when I was doing a lousy job. I was doing that after I improved and picked up on the tricks."

15 an intellectual skill to evaluate the worth of the new technique in different situations. The effect was realising the importance of the new skill for achieving his goal to be the best and perform in novel situations.

- "[I got the message] when it was pointed out to me about how much better it was. The teacher said: 'You do a run your way and I'll hold your hand and guide you in the way that I think it should be done, then you judge.' I compared them and found that his way was better using his technique."
- "It got me thinking saying: 'Oh! shit maybe I should do it this way? This is maybe the best way?'"
- "Once you get over that initial hurdle and you're satisfied with that, but want to get over more hurdles you experiment further and get better and better."
- "When I got better I came across some small problems with different properties in metals. The smaller problems you seem to overcome quicker than the initial problem because you have that background experience."

RESEARCHER'S OBSERVATIONS AND COMMENTS

Jack learnt a new technique for welding. An observation is that Jack could have very easily experienced a breakthrough in welding, but, still weld badly. It can be argued that without an 'expert' on which to model, Jack may have still experienced a breakthrough by muddling through it on his own, but he risked developing a skill based on bad practice as in fact happened with his father. The teacher, having the competence to demonstrate correct practices, is seen as an essential part of Jack reaching an industry accepted skill. The point to be made for adult educational practice is that the teacher played a responsible role through his example.

Jack's point of breakthrough was realising that he had an inappropriate idea of welding technique. He was not reluctant in foregoing his ideas. He was careful in the process of change because he evaluated the new skill to determine its benefit over the old and tested the technique thoroughly before, and in a novel situation, he gained a new insight. Discovering the benefits he realised his breakthrough.

Melinda

PREAMBLE

Melinda's background is in television journalism. She is an accomplished news reader and was host of her own daytime current affairs and community interest program.

Melinda's interest is in performing arts which she pursues part time.

Her breakthrough occurred while composing the choreography for a musical production to be performed on stage at a local theatre. Her task was to write the scripts, select the music, create the dance routines, choose the costumes, and train the dancers.

There was a degree of difficulty in creating the effects and training the dancers because Melinda teaches a dance troupe made up of people (male and female, young and old) who are not necessarily artistically talented, but, people simply with an interest in dancing. Melinda's goal was to produce a substantial musical that was entertaining, able to be performed by inexperienced dancers, and to a standard capable of entertaining a critical public audience.

Melinda wrote the program earlier in 1993. It was done under stressful circumstances brought about by time constraints through work commitments and obligations to her dance troupe and family. Her interview was conducted 4 March 1993 and her breakthrough occurred in February the same year.

Melinda is between 30 and 35 years of age.

LEARNING BREAKTHROUGH EXPERIENCE

Melinda's breakthrough was learning to develop a coherent theatrical program from a set of disparate elements. What she learnt was to create dance routines suitable for dancers of limited and variable abilities in situations of staged public performance. Her breakthrough was creative.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Melinda experienced the phenomenon was:

1 independence or informal learning. She was self-directed, self-motivated and influenced by personal experiences.

- "I sat down to piece a program together and I had notes all over the place, pages and things everywhere."
- "I went straight to the table, sat down and put a piece of paper into the typewriter.

I had all my little pieces of paper spread all over the place including the floor.

I started typing when suddenly it all began to fall into place. Before I knew it I had finished the first part of the program on the one sheet and was changing paper."

2 task oriented. Her task was to produce a quality musical program.

- "It is the same with choreographing a show and putting a theatrical production together like I'm doing at the moment. I sat down to piece a program together..."
- "...once I start a job I like to get it over-and-done-with. I hate leaving anything unfinished. That is one of my biggest frustration's. I am task oriented."
- "I had to have something concrete by the weekend to show people."
- "I set myself a deadline, that does play a big factor with me. I am not a procrastinator because if I make up my mind to do something I'll do it there and then."

3 in the intellectual domain of creativity. Melinda was choreographer for the musical production.

- "[I try to do some of the things i.e., get up and dance;] I do that all the time. The cassette is always in the sound system and I'm around the lounge room dancing trying to work out steps playing the same piece of music over and over because even if I come up with a step that I think will look quite good if I'm not one hundred percent satisfied I'll try it another way."
- "...I had to sort out exactly who was going to be in which items so I could make a dance list advising them of the number and dance routine each would have to learn and who was going to be in which one. I had to prepare a costume list so they could start costume hunting and know that that was for that item and that for that item, etc. It was a triple work load that I had to get through that day."
- "...we then started listening to the bits and pieces and as I said she (Mum) would go through it and I would say that that was no good m-- or that one was OK but that's the one - and that sort of thing."
- "It is all well and good my putting this down on paper and for me to say: 'That is what I want to see in this act and that is what I want to see in that act', but can I transfer it to those people who are not professional. All this was going through [my] mind at that time."

4 demanding. She was obligated to create and write the program within a tight time frame. Stress was a factor in her behaviour, made obvious through times of frustration and lack of creativity.

- "Since leaving Sunshine Television - it was wonderful - receiving all these job offers from all over the place, but, it was like being inundated having to put people off. The things that I wanted to happen did happen in terms of jobs and projects. These were the things I really want to do e.g., this show and my new job at TAFE.

It put more pressure on me. The other pressure was from people hounding me to do things. For the sake of being polite you tend to pussy foot around and say that you'll think about it where as you felt like saying: 'Well back off and leave me alone I don't want to do this.' All this is happening at the same time.

There was also a whole new personal routine to get accustomed to."

- "It was very frustrating for me to have had such a mental block with this program, because once I start a job I like to get it over-and-done-with. I hate leaving anything unfinished. That is one of my biggest frustrations."
- "Saturday was a stinking hot horrible day and I was tired and not in a very good frame of mind because of the weather. I sat down and looked at this thing and it seemed that no matter which way I turned I couldn't piece it together. It wasn't going to work, because this wouldn't allow that person to get changed in time and this person didn't do that type of item so what could I put there instead and all that sort of thing; or this person didn't have the capability to handle that routine so what could I give them to do to keep them happy while somebody else did the more difficult thing and the other person didn't feel left out. You had all of these personality factors that had to be taken into consideration which made it all the harder."
- "I sat down and looked at it and I had reached the point where I was so frustrated (on the Saturday) and I thought: 'This is impossible'. Initially, when I had approached the project - I love taking on fresh challenges - there was this excitement; when you could say: 'Yeah, this is something new to work on and I can do this. I sat down and wrote: 'Yeah, well I can put that in and I can ask them if they would like to do an item etc. That soon ?? because it was not coming together and I sat there on the Saturday and thought: 'This will never work, how will I ever make it work?'. I sat with my head in my hands literally and thought: 'It's hopeless'. Knowing that I was running out of time because I soon had to come up with a finished product..."
- "I had sat down...I'd made about half a dozen attempts at this program and changed it each time and thrown the old copy out and gone on with a new one. Then threw things about (mentally) and they weren't workable - so I threw them out etc."
- "No it doesn't put pressure on you in that sense (the sense of it being a creative thing which I love). The only pressure is in the deadlines and knowing that you are working in such a restricted sense."
- "I still didn't have all the pieces of music that I was going to use."

The fact that I knew that I had a class coming up in three days and I had to start teaching them some routines and I could not do that unless I had the music to teach it with."

- "It was a weekend, when I started to piece it all together and I was doing many things. It was a very busy weekend. I had lots of jobs to get finished. That was one job in particular that I had to get finished, because I had told the people in my class that 'Next week, I will have this program ready for you so you know exactly what you will be doing in the program and when'. I set myself a deadline, that does play a big factor with me. I am not a procrastinator because if I make up my mind to do something I'll do it there and then."

5 in the affective domain. She experienced mood changes on a continuum of times of moderate depression to swings of elation.

- "I sat with my head in my hands literally and thought: 'It's hopeless'. Knowing that I was running out of time because I soon had to come up with a finished product, as I recall, I put it down in disgust with the thought: 'Forget it'. I walked away. I went and flopped down in a heap."
- "I didn't touch it for the rest of that day (Saturday). That was the afternoon. At that stage I had worked on it for three or four weeks. I came home (from her Mother's place) and I still didn't touch it. I was determined not to go back to it for the rest of the night. In fact, at that stage, I was quite disgruntled and thought that I was never going to get this thing done."
- "I think that one of the things that helped or one of the factors that influenced me (nothing against my husband) was that he tried to help with these things as much as he could, but, it was a total foreign world to him because he has never had anything to do with dancing. He can play the piano and know if someone is singing off key, but that is about it. He could not help me with this. I was trying to do this stuff earlier in the day and he would be there saying 'What are you doing now?' to which I would reply: 'Same thing'. He would come back with: 'Can I help?' or he would come and lean on the back of the chair while I'm working. I would quip: 'Don't lean on the chair, it drives me nuts, and don't look over my shoulder and just go away and let me get on with it! Where to go? Over to Mum's."
- "I admit it felt like a weight had been lifted after being at my Mum's [because the music part of the program came together]."
- "The minute that I started to type, it all fell into place. I could feel my mood lifting."

6 compelling. Melinda's reputation was at stake. Compulsion to succeed and the fear associated with thoughts of not achieving, temporarily suppressed creativity to be replaced (at times) by a more analytic approach.

- "I am a perfectionist. I get very angry with myself if I don't do something right the first time. Contrary to the image of dancers with pushy stage Mums, I didn't have the pushy stage Mum - I pushed me myself. I probably demanded a lot more of myself than I would normally have to do."
- "...being a perfectionist, my biggest block is frustration with myself."
- "I am not an impulsive person. I am a very practical person and, like I said, analytical and I think things out... Sometimes breakthroughs come when I am totally relaxed. I've got to be totally relaxed to be at my most receptive. I get flashes of inspiration when I'm asleep. With dance routines I can dream something and I've woken up in the middle of the night and thought: 'That's it!'"
- "[On waking the next day I thought that] I've got to get that dammed thing finished. Amazingly, I did start it in the morning. I would usually start such things in the afternoons on a Sunday. When I wake up I tend to itemise the day into all things that I have to do. That program was bugging me all weekend. I knew that I had to get it finished so other jobs were put aside. I also, at that particular time, think that I was starting to get a bit scared and a bit worried."
- "It depends on what is important to me - this program is extremely important because on the line is my reputation as a choreographer, producer and a teacher. It is an extremely important project to me. It was bugging me so much that I couldn't work the thing out. I've staged full musical variety reviews for players writing the whole thing from scratch. I sat here with this block and thought: "If I could work out a show that was that big and had over a hundred people in it and of that length and involvement, why can't I put together a simple program for a variety concert?"

Melinda experienced the phenomenon as:

1 a realisation of her ability to complete the program written sequentially with all the necessary ideas and detail

- "[The breakthrough came] After I got past the opening number, because the next sequence was a particularly complicated one and didn't have all the music nor had I a clue of what I was going to do.

By the Sunday I had this piece of paper with all the things that I had scribbled out when I was at Mums. So where as before I looked at this sequence of dance routines and thought: 'How am I going to do this and who am I going to get to do what?'. I had all of these song titles that I could type in. The minute that I started to type, it all fell into place."

- "I find I function best when I leave something until the last minute and then it has to be a spontaneous thing and I think: 'All right I've got to do this, I've got no choice, it's got to be ready by tomorrow etc and get on with it'. That is when I produce the best results - under pressure."

2 a change of disposition from a anxiety to composure.

- "It was very frustrating for me to have had such a mental block with this program, because once I start a job I like to get it over-and-done-with. I hate leaving anything unfinished. That is one of my biggest frustrations."
- "The minute that I started to type, it all fell into place. I could feel my mood lifting."

3 a transformation in her ability to understand how to utilise the skills of her dancers in situations of staged public performances.

- "It is all well and good my putting this down on paper and for me to say: "That is what I want to see in this act and that is what I want to see in that act", but can I transfer it to those people who are not professional."
- "I sat down to piece a program together and I had notes all over the place, pages and things everywhere. I know how I wanted it to look, but, then of course you've got limitations of your environment, the talent that is at hand, the technical facilities that are available and you've got to work within that framework."
- "[It is] the ability to 'walk into' a piece of music and make it live. That [is what] happened over at my mum's place."
- "By the Sunday I had this piece of paper with all the things that I had scribbled out when I was at Mums. So where as before I looked at this sequence of dance routines and thought: "How am I going to do this and who am I going to get to do what?" I had all of these song titles that I could type in. The minute that I started to type, it all fell into place."

What is seen as contributing to the phenomenon is:

1 Melinda withdrawing from the task. She put her thoughts aside to start afresh at a later date. In doing so, she came back to task more receptive to music and more attuned to her ideas.

- "[That night before going to sleep] I probably only thought about it in terms of knowing that I had to get the job done."
- "I sat with my head in my hands literally and thought: 'It's hopeless'. Knowing that I was running out of time because I soon had to come up with a finished product, as I recall, I put it down in disgust with the thought: 'Forget it'. I walked away."

I found that that is always effective with me when I reach that block, that point, that plateau stage, I am better off walking away. I know that some people when they reach that stage they will tussle with it over and over until they get a breakthrough. That doesn't work for me. If I did that I would only get more frustrated and cranky and tired and no further advanced. I went and flopped down in a heap.

I didn't touch it for the rest of that day (Saturday). That was the afternoon. At that stage I had worked on it for three or four weeks. I came home (from her Mother's place) and I still didn't touch it. I was determined not to go back to it for the rest of the night. In fact, at that stage, I was quite disgruntled and thought that I was never going to get this thing done."

- "We sat and chattered for a while, had a cup of coffee and I basically showed her (Mum) what I had worked out for the program. She queried a couple of things. Then I asked about the records to which she responded by haling things out."

I rifled through all the records while she played bits and pieces. She would play something on the piano and at times a tune would fit and I'd say: 'That's great, yes, I can really see that, that's good'."

- "Sometimes breakthroughs come when I am totally relaxed. I've got to be totally relaxed to be at my most receptive. I get flashes of inspiration when I'm asleep. With dance routines I can dream something and I've woken up in the middle of the night and thought: 'That's it'."

With this time...it seems like it hid in as much as one day it was all wrong and the next day it was all right."

- "I came home (from her Mother's place) and I still didn't touch it. I was determined not to go back to it for the rest of the night. In fact, at that stage, I was quite disgruntled and thought that I was never going to get this thing done."
- "I felt a lot happier at that stage because at least I had music. Prior to that all I had were bits of notes."

2 a fresh new start. Rather than ponder futile avenues for solutions, she put the musical aside to start afresh at a later date. She was more relaxed as a result and confident of finding new avenues in which to investigate material for the program.

- "The feeling when I was at my Mother's place was good, a lot more confident. In a way this is the kind of thing that we have not done for a few years now and it took me back to the days when I was doing eisteddfod work..."

I came home in a much more relaxed frame of mind than when I went out. I still didn't touch it that day. I didn't want to go back to it. I had had enough."

- "We sat and chattered for a while, had a cup of coffee and I basically showed her (Mum) what I had worked out for the program. She queried a couple of things. Then I asked about the records to which she responded by halting things out.

I rifled through all the records while she played bits and pieces. She would play something on the piano and at times a tune would fit and I'd say: 'That's great, yes, I can really see that, that's good!'"

- "By the Sunday I had this piece of paper with all the things that I had scribbled out when I was at Mums. So where as before I looked at this sequence of dance routines and thought: 'How am I going to do this and who am I going to get to do what?' I had all of these song titles that I could type in. The minute that I started to type, it all fell into place.

I could feel my mood lifting."

3 operating in an organised way was an aid to memory that Melinda used to manage incoherent information. She tended to chain ideas, notes and advise in an order that suited her purpose. Order represents her rule for behaviour when searching for missing elements of the task.

- "I was confident about and knew that there wouldn't be a problem with the opening number because I had already choreographed that and taught it to the dancers. That definite part of the program I typed, the title of the music, the routine, and who would be performing that item."
- "I'd made myself a list. I'm a great list maker. The program was one of them."
- "By the Sunday I had this piece of paper with all the things that I had scribbled out when I was at Mums. So where as before I looked at this sequence of dance routines and thought: 'How am I going to do this and who am I going to get to do what?' I had all of these song titles that I could type in."
- "I am very orderly. I love to do things in sequence. I hate doing things and leaving holes and having to leave things and go back. I'm determined that if I'm going to do something like that I do it straight through or not at all."
- "[The breakthrough came] after I got past the opening number, because the next sequence was a particularly complicated one and didn't have all the music nor had I a clue of what I was going to do."

4 a dream. Perhaps subconscious activity provided information in a novel, but, practical way. Melinda perceived through visionary impressions the consequences of her ideas and imagination's. The dream aided through providing inspiration which in turn was motivating.

- "Sometimes breakthroughs come when I am totally relaxed. I've got to be totally relaxed to be at my most receptive. I get flashes of inspiration when I'm asleep. With dance routines I can dream something and I've woken up in the middle of the night and thought: 'That's it!'"
- "I have a very active subconscious. If something is bothering me I can virtually guarantee that I will dream about it. Vague dreams usually involve either visualising the way something should turn out or I want it to turn out. Sometimes it works the other way, I visualise something becoming a disaster and even down to dreaming conversations. I can have that

conversation in five days and think: 'I've said this before'. With something like the visual thing it crops up in my dreams.

In a disjointed way, when I wake up I can't necessarily link all the things together, but, I know that that particular problem has formed the basis of whatever it was that I dreamt about that night and I can remember different scenarios and routines and things.

[it happened that night] with the dreams, they are not specific enough for me to tell you which step I did in a dance, but, the emotional scene, it being on stage and all the rest of it."

5 the challenge of creating something worthwhile was instrumental in Melinda maintaining interest.

- Initially, when I had approached the project - I love taking on fresh challenges - there was this excitement; when you could say: 'Yeah, this is something new to work on and I can do this'. I sat down and wrote: 'Yeah, well I can put that in and I can ask them if they would like to do an item etc.
- "The greatest debate was whether it would have been easier to just give up on the whole idea and get out in those early stages when it was still possible to get out. I could have said to the students: "Look, we don't have enough time let's try next year.". But, I am not the type of person who gives up on anything. I hate to let anything best me. I was just determined that it would come together and it would work. As a result we are on stage in a weeks time."

6 an enjoyable pursuit. Melinda enjoyed her involvement in the performing arts. She also enjoys typing. Apart from the motivational aspect, enjoyment was influential in Melinda's choice of preferred method for typing to access her thoughts.

- "No it doesn't put pressure on you in that sense (the sense of it being a creative thing which I love). The only pressure is in the deadlines and knowing that you are working in such a restricted sense."
- "Yes, and that is why the relaxation thing plays a big part for me. I can handle heaps of pressure and always have been able to, and like I've said, meet the most awful deadlines. Pressure doesn't bother me."
- "So it is a kindred spirit and being with Mum is conducive to achieving the things you want to achieve. You have someone else there and we both love the big musicals and the same types of music. [I felt] good, a lot more confident."

In a way this is the kind of thing we have not done for a few years now and it took me back to the days when I was doing eisteddfod work. We would sit for hours listening to pieces of music and trying to work out routines.

I came home in a much more relaxed frame of mind than when I went out."

- "Yes I do actually [like to type]. The minute that I started to type, it all fell into place."

7 familiar surroundings. They were surroundings in which Melinda found success in the past and which gave her reason to expect success again. This was an environment where Melinda could confidently set her thoughts on the task.

- "Part of the breakthrough was that I went over to Mum's place because Mum has always been there when I was doing any of these creative dance things."

- "If I can get the right environment I find things come to me very easily..."
- "I tend to strive for as leisurely a morning as possible. Sundays are usually spent with a leisurely morning alone in the house. My husband goes to cricket.

I went straight to the table, sat down and put a piece of paper into the typewriter. I had all my little pieces of paper spread all over the place including the floor.

I have a little Type Star 6 CANON portable typewriter. The ribbons are so expensive that I only use it when absolutely necessary or if I am travelling I will take it with me. I sat straight down and put a piece of paper into the typewriter.

8 an habitual reaction. Melinda sought help from her mother who held things in common. There was a rapport with her Mother which was familiar. Being in the family home also provided familiarity. In this context, Melinda relaxed to be free of inhibiting distractions providing the environment in which to collect music which was eventually used in the program.

- "The fact that I knew that I had a class coming up in three days and I had to start teaching them some routines and I could not do that unless I had the music to teach it with.

I wasn't in the frame of mind to do it, I didn't really feel like doing it. I knew that I had to go (to her Mother's)."

- "...I wrote it off as simply being tired and having too much on. I also, at that particular time, think that I was starting to get a bit scared and a bit worried. My biggest failing is that I won't ask for help."
- "...there were one or two options with particular pieces of music. That is when I turned and asked somebody else."
- "Part of the breakthrough was that I went over to Mum's place because Mum has always been there when I was doing any of these creative dance things. She was always there. While she can't do the practical side, creatively, she is a good ideas person and she knows what is necessary in stage production.

I admit it felt like a weight had been lifted after being at my Mum's [because the music part of the program came together]."

- "Where to go? Over to Mum's. She is a kindred spirit because she has done all these things for so many years. She would have loved to be on the stage herself or involved with professional theatre if she had a chance. So it is a kindred spirit and being with mum is conducive to achieving the things you want to achieve. You have someone else there and we both love the big musicals and the same types of music.

[I felt] Good, a lot more confident. In a way this is the kind of thing that we have not done for a few years now and it took me back to the days when I was doing eisteddfod work. We would sit for hours listening to pieces of music and trying to work out routines. In all the years that I did those things Mum was my greatest supporter and she was the one who sat through what would have been hours of boring rehearsals. She could not get up and show me steps because she is not a dancer, but, she could say: 'that there is something there that doesn't look quite right'. She would say: 'Why don't you try it this way' or 'is there another step you can put in there instead'. She was the one who would keep the creative 'juices' flowing. So it was good in that way. It took me back to when we would do that sort of thing all the time."

- "I went over there to record some music that was needed for the show because she has this incredible collection of records. I took a rough run down of the program and showed her. She sort of looked at one or two things and said: 'If you do that there what will happen with

this and that'. Actually, a couple of things that she said caused me to feel that my ability was being questioned. That probably helped a lot to get that input from another person. I know that a lot of these motivational people talk about personal networking and how important it is to have your own network of close associates or friends or relatives that you can sit down and talk things over with and get their feed back.

That [session with Mum] obviously did help. The breakthrough certainly didn't come then, but, her contribution made a difference."

- "I was also intending to go to 4 MB and try them. I fully expected to come home (from Mum's place) not having accomplished half of what I wanted to; where as I came home having accomplished all of what I wanted. From that point the pieces started to fit into place.

I came home in a much more relaxed frame of mind than when I went out. I still didn't touch it that day. I didn't want to go back to it. I had had enough."

9 experimentation. Trailing dance steps herself and sensing stage atmosphere was inferred to perhaps condition Melinda to build an empathy for her dancers' concerns.

- "I had sat down...I'd made about half a dozen attempts at this program and changed it each time and thrown the old copy of it and gone on with a new one. Then threw things about (mentally) and they weren't workable - so threw them out etc."
- "I've gone down to the hall and taught them steps that I've worked out and said to them: 'Look that may be subject to change'. Then I've come home the next day and suddenly thought: 'That step fits in there better than that one' go back next week and told them to forget what I said last week; it's this."
- "It is the same with choreographing a show and putting a theatrical production together like I'm doing at the moment. I sat down to piece a program together and I had notes all over the place, pages and things everywhere. I know how I wanted it to look, but, then of course you've got limitations of your environment, the talent that is at hand, the technical facilities that are available and you've got to work within that framework. It seemed like: no matter which way I rearranged these things I could not do it. However, about a week ago it all just fell into place. Now I've got the program all done and it is all finalised and it is simply a matter of making up the routines and teaching."

10 adapting her knowledge of dance and music to her dancers. By independently visualising her dancers performing to the music, the impression provided information about level of difficulty. This information helped her choose suitable music, performers, costumes and adapt dance steps.

- "I had the image. I felt a lot happier at that stage, because at least I had music. Prior to that all I had were bits of notes."
- "It is all well and good my putting this down on paper and for me to say: 'That is what I want to see in this act and that is what I want to see in that act', but can I transfer it to those people who are not professional."
- "[At Mum's place] I rifled through all the records while she played bits and pieces. She would play something on the piano and at times a tune would fit and I'd say: 'That's great, yes, I can really see that, that's good'.

I admit it felt like a weight had been lifted after being at my mum's [because the music part of the program came together]." I had the image. I felt a lot happier at that stage, because at least I had music. Prior to that: If I had were bits of notes."

11 an intellectual skill for unifying an idea into a theme or impression of the type of program that she wanted. Inventing the appropriate theme represents a schema or framework in which material, that she was searching, could be chosen.

- "A good choreographer listens to what the music is saying and a bad choreographer simply makes sure that the steps fit into the time with the music. There is a lot of learning involved there.

It's a hard thing to explain from a dancers point of view, but, if you are a reasonable choreographer the music does talk to you the minute you hear it down to the point where you see the actual steps in your mind."

- "I don't know, some funny little thing that is back here in my head that when you here that music you know that the sort of dance you want to do is going to fit to that music."

12 composure. A composed mental state was a prerequisite of spontaneity. Without any distractions Melinda was able to be quiet to access her creative ability.

- "I admit it felt like a weight had been lifted after being at my mum's [because the music part of the program came together]. I had the image. I felt a lot happier at that stage, because at least I had music. Prior to that all I had were bits of notes. I came home in a much more relaxed frame of mind than when I went out."

- "On the weekends, I tend to strive for as leisurely a morning as possible. Sundays are usually spent with a leisurely morning alone in the house. My husband goes to cricket.

Amazingly, I did start it in the morning. I would usually start such things in the afternoons on a Sunday. When I wake up I tend to itemise the day into all things that I have to do. That program was bugging me all weekend. I knew that I had to get it finished so other jobs were put aside."

- "Sometimes breakthroughs come when I am totally relaxed. I've got to be totally relaxed to be at my most receptive. I get flashes of inspiration when I'm asleep. With dance routines I can dream something and I've woken up in the middle of the night and thought: "That's it!"
- "I see myself as a strange contradiction. I'm one of those people who can do three jobs at once if necessary, in fact I usually do, doing one thing at a time never satisfies me."
- "...if you don't have the right frame of mind it doesn't happen. You just keep hitting this barrier."

13 spontaneity that evoked an intrinsic automatic response. Spontaneity was a forced condition brought on by pressure of time running out. Spontaneity was a precursor to learning breakthrough and the creation of the musical production.

- "I find I function best when I leave something until the last minute and then it has to be a spontaneous thing and I think: 'All right I've got to do this, I've got no choice, it's got to be ready by tomorrow etc and get on with it'. That is when I produce the best results - under pressure."
- "By the Sunday I had this piece of paper with all the things that I had scribbled out when I was at Mums. So where as before I looked at this sequence of dance routines and thought: 'How am I going to do this and who am I going to get to do what?' I had all of these song titles that I could type in. The minute that I started to type, it all fell into place."
- "The great part about it was that, even with out visualising the big picture of the whole show I could still do everything that I wanted to do, apart from one or two things that were not quite

the way I would like then, but I gain accepting the limitations I could still do everything that I wanted to do within those limitations and keep everybody happy at the same time."

14 intuition or sixth sense being Melinda's innate ability to set dance routines to music. A sixth sense based on empathy for her dancers and preparation of the information to that point was activated to produce the program.

- "I don't know, there is a breakthrough [or rather] a plateau stage where you get nowhere i.e., no matter how many times you do that step you can not do it; or no matter how many times you listen to that piece of music you can't envisage what goes with it. Then, suddenly there is this breakthrough period where suddenly you think to yourself: 'That's it! that is what it was meant to be.' It appeared as if by magic it suddenly falls into place."
- "It is the same with choreographing a show and putting a theatrical production together like I'm doing at the moment. I sat down to piece a program together and I had notes all over the place, pages and things everywhere. I know how I wanted it to look, but, then of course you've got limitations of your environment, the talent that is at hand, the technical facilities that are available and you've got to work within that framework. It seemed like: no matter which way I rearranged these things I could not do it. However, about a week ago it all just fell into place. Now I've got the program all done and it is all finalised and it is simply a matter of making up the routines and teaching."
- "The sixth sense technically is the primary thing with me. That is what I go by i.e., what will look good on stage, what will come across well, what will have audience appeal. It is not until I have got the body of the show when I stopped and thought: "Who could do this?". That is where it got to the secondary impressions of visualising who could cope with a bit of reshuffling."

15 a positive tactile distraction of typing possibly provided a channel in which to disengage from intrinsic inhibiting influences and thoughts i.e., perhaps overwhelming thoughts of another failure or thoughts of household chores. She didn't necessarily comprehend the material that she was typing, she just typed. Typing was an enjoyable tactile experience that provided the composure for retrieval of information.

- "I started typing when suddenly it all began to fall into place. Before I knew it I had finished the first part of the program on the one sheet and was changing paper."
- "By the Sunday I had this piece of paper with all the things that I had scribbled out when I was at Mums. So where as before I looked at this sequence of dance routines and thought: 'How am I going to do this and who am I going to get to do what?' I had all of these song titles that I could type in. The minute that I started to type, it all fell into place."

RESEARCHER'S OBSERVATION AND COMMENTS

It is apparent that Melinda was expecting a breakthrough. In her terms, she was waiting for spontaneity. While her breakthrough experience was a single spontaneous reaction in the face of pressure of obligation, the breakthrough was a complex series of events and prior learning i.e., aspirations, knowledge, experience, innate ability,

atmosphere of the moment, and emotions all combined to converged to the moment when she began typing, and as she said: "...it fell into place."

The contribution that Melinda's breakthrough has for the field of adult education is her learning process. She accessed information through using preferred activity (for typing) in a preferred working environment (at home on a quite Sunday morning). Those two factors, preferred environment and access, relate to behavioural and external conditions allowing unimpeded access for retrieval of information from long term memory. The unique quality of the breakthrough experience of learning compared with other experiences of learning is that retrieval was not through *cues or memory search*, but through *intuition and feelings and attitude*. Melinda did not use the papers or information on music or dance to experience learning. She spontaneously - I suggest unwittingly - typed, and after doing so became conscious of learning to fit the pieces together. Cues and memory search happened after she accessed the part of memory that contained the relevant material.

Melinda is an alert active person. She seems to be on the go all the time. Seemingly, she is a person who is very talented particularly with public relations and professional presentation. Her creativity and in particular the choreography is a manifestation of herself, her experiences as a child dance protégé, parental influence and her ability to entertain.

Neil

PREAMBLE

Neil is a dentist by profession and, who, early in 1992 became involved in setting up a business selling Amway products. Neil experienced a change to his personality after reading books recommended by Amway and applying what they suggested as strategies to become a successful salesperson. He suppressed a melancholy trait (they are thinkers concerning themselves with detail) to develop a more outgoing personality. What outwardly changed was Neil's attitude to people, dentistry and life generally.

Neil is between 30 and 35 years of age.

LEARNING BREAKTHROUGH EXPERIENCE

Neil's breakthrough was learning an attitude. It happened that his experience was talking to a motel manager. Neil acted on his desire to be more outgoing by coming out of his comfort zone to talk to that manager with the result, Neil learnt to speak comfortably with strangers. Transformed personally, was a shift from being a typical melancholy trait to becoming more sanguine.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Neil experienced the phenomenon was:

1 monotonous and lacked challenge brought about by the day to day routine of work. He developed a fear of the future.

- "I was starting to get a bit...am doing the right thing - as other people think at certain time in their careers. Things were just kind of going along. I was doing the work more than trying to communicate with the patients. I was still communicating, but not as much as I do now. At one stage I was losing interest but not in the short term more in the long term because I was thinking: 'Oh boy, I'm going to be here for the next twenty years doing this.' I couldn't see myself in another twenty years doing the same stuff. I was starting to get sick of it."
- "One thing that dentists hate the most is when they get to work on a Monday morning and see the first patient and you're full of life after the weekend and you say: 'Good morning!' and they say: 'I hate dentists.'. I feel like crawling into a hole. It's a real let down. I don't seem to get that as much now - Oh, you get the odd patient."

2 a diversionary interest to dentistry.

- "Initially, I was drawn to (Amway) because of the business of selling Amway.
- "I was totally opposed to it to start with. Tina (wife) was the one who got me involved. We went to a few Amway meetings and seeing and meeting other people who were in Amway and reading these books and listening to the tapes."
- "I searched for a diversion more than a way out. So I could spend less time at the dentistry."

3 in personality change. He was a thinker who dealt with detail (melancholy). Amway presented a need to be outgoing (sanguine).

- "My first phone call was terrible. (This is the time when Neil was ringing people about Amway). A lot of people ring up and start to talk about something else, but, we decided to do it as it is and that's that. We were going to be professional about it. We were not going to try to talk people into it. If they didn't want to listen that's fine. We actually sat down with the people who sponsored us and wrote exactly what we were going to say so we could simply read it off.

We had success with the meetings because I was ringing the right type of people. We started to get a group of people involved. They ended up not doing anything with it - that's beside the point. Tina would tend to ring people and get few takers where I would ring five people and book three or four meetings.

I would write down all the names of the people that I was going to ring and what I was going to say to each person. At the time, I would write down something different for each person because I knew the people that I was ringing and I thought that I would say something different to each of them. I thought that it might have more impact or get their attention or something. I had an idea of their personalities. Most of the time I could talk to them fairly well. Most people don't want to do it anyway."

- "Talking was when I was out of my comfort zone and that was my breakthrough"
- "To start with I had 'diarrhoea' over it, I would get upset. It would take me about an hour to pick up the phone. When I think back on it, I would think: 'Why am I doing this to myself?'. When really I do enjoy dentistry."

4 informal individual learning. Neil found solace through individual learning.

- "My interest was mainly in finding out what my personality was and in them saying that you can work out someone else's personality."
- "Reading the books before I go to sleep seems to help stick it in my mind. I can think about things in the morning."
- "(I listened to the tapes) in the car - whenever we drove anywhere. Driving to work or to the bay to do something."

5 experiential learning where casual conversation provided the coaching for developing his interaction skills.

- "Realising that it had changed me in a way that I thought: 'Oh! I'm talking more to the patients'. I felt more at ease with my work as well as talking with people.
- "I was trying speaking skills. It worked and it just kind of fell into place. I could start talking to people and I found that they started talking to me. It made me feel good."

- "I remember talking to Tina about what the patients had said and Tina would reply that I must be talking more with the patients now than before because you're coming home with a lot more information."
- "I learnt the skill of being able to talk to people. Because if you talk to people for a while you can sort of work out their personality and then know what not to say. You can have a feeling about them, but you are usually wrong."
- "We stopped in Armidale on our way down to Sydney. That was the time when I noticed the change.

We stopped in a motel. Usually I push Tina (wife) into talking with the people and paying the bill, but this time I did it. I decided to go in with the point of talking with the fellow."

6 unfamiliar territory where he experienced uncharacteristic circumstances for personal challenge. Neil's breakthrough occurred around unfamiliar activities.

- "To start with I had 'diarrhoea' over it, I would get upset. It would take me about an hour to pick up the phone. When I think back on it, I would think: 'Why am I doing this to myself?'. When really I do enjoy dentistry."
- "We stopped in Armidale on our way down to Sydney. That was the time when I noticed the change.

We stopped in a motel. Usually I push Tina (wife) into talking with the people and paying the bill, but this time I did it. I decided to go in with the point of talking with the fellow."

7 an aversion to books and reading causing an initial hindrance to gaining information on which to understand himself.

- "I had narrowed my mind in that way because there is so much more to learn in life than just five years at uni. So they (Amy) suggested starting off by reading five or ten minutes each night."
- "[I read the books] at night. I hate reading books...I hated reading books until I started to read these books. I had my fill of books at university."

Neil experienced the phenomenon as:

1 a change in the way he socialises by conversing more where before he would seldom speak. Neil now takes time to get to know people.

- "My interest was mainly in finding out what my personality was and in them saying that you can work out someone else's personality. You can talk to them and listen and start to work out other people's personality, how to deal with them and how to say the right things without upsetting them."
- "I learnt the skill of being able to talk to people. Because if you talk to people for a while you can sort of work out their personality and then know what not to say. You can have a feeling about them, but you are usually wrong."
- "Realising that it had changed me in a way that I thought: 'Oh! I'm talking more to the patients'. I felt more at ease with my work as well as talking with people."

I was trying speaking skills. It worked and it just kind of fell into place. I could start talking to people and I found that they started talking to me. It made me feel good."

- "I was doing the work more than trying to communicate with the patients. I was still communicating, but not as much as I do now."

2 a change to self-assertiveness becoming more positive in business activity and life generally.

- "[Talking to people] helped me see that dentistry was what I wanted to do. Since the change I've expanded what I do with treatment plans. They have changed a bit. It has helped to broaden my field in dentistry that, in the past, I had not done a lot of and with more confidence."
- "I've found out that I have chosen the right profession doing what I am doing because I am that type of person that has to be continually doing things - active."
- "[What actually changed was] my attitude to people, dentistry and to life in general."
- "It changed my whole outlook on life."

3 a transformed personality. Neil has learnt to suppress his dominant melancholy trait to become more outgoing and decisive.

- "I am more motivated [now]. If I say I'll do something I'll do it more so now than I would have before. I am more confident with my work. I am more likely to try things that I would not have attempted in the past. I tend to be able to work out problems with more ease. We now have staff meetings.

I am more of a reality type of person and want to do things rather than just knowing about them. I think - that's melancholy trait. I think about things too much - that is my personality."

5 a release of a dormant verb: I skill realising his ability to interact with people.

- "It's stuff (latent skills) that is already in there that has materialised."

6 a good feeling of confidence when in the presence of people. He feels at ease now while conversing.

- "I was trying speaking skills. It worked and it just kind of fell into place. I could start talking to people and I found that they started talking to me. It made me feel good."

What is seen as contributing to the phenomenon is:

1 a decision to change, brought about by monotonous circumstances and the prospect of conditions not changing. The future seemed to hold no challenge. Neil acted to make a change which is seen as the first step in the change process and his breakthrough experience.

- "I was starting to get a bit...am doing the right thing - as other people think at certain time in their careers. Things were just kind of going along. I was doing the work more than trying to communicate with the patients. I was still communicating, but not as much as I do now. At

one stage I was losing interest but not in the short term more in the long term because I was thinking: 'Oh boy, I'm going to be here for the next twenty years doing this.' I couldn't see myself in another twenty years doing the same stuff. I was starting to get sick of it."

2 a change model on which to emulate. Maybe the information provided by the model was an image of the future. Neil could see that change was right for him because he identified with the model with a result of being drawn to the qualities that he sort for himself.

- "...the tapes were of people and what they had done, you would think that that would be good for you to do likewise and get to that level. Then when we get to that level we can make our tape and say that that is what we did."
- "In Amway, you have someone who sponsors you and helps by teaching you how to do the business. This fellow was a very close friend of Tina's - they were school captains in Brisbane. He had the book here one night and we were going through it and we did the questionnaire on personality at about 11.30 or 12 am that night."
- "Going to a few Amway meetings and seeing and meeting other people who were in Amway and reading these books and listening to the tapes, I began to think: 'Mm, that's interesting.'. Then I got more involved."

3 inspiration from another person. This perhaps mobilised Neil to act on change.

- "[Tina (wife) motivated me to read the first book]. I wanted to know what it was about. In Amway, you have someone who sponsors you and helps by teaching you how to do the business. This fellow was a very close friend of Tina's - they were school captains in Brisbane. He had the book here one night and we were going through it and we did the questionnaire on personality at about 11.30 or 12 am that night."
- "I was totally opposed to it to start with. Tina (wife) was the one who got involved. Going to a few Amway meetings and seeing and meeting other people who were in Amway and reading these books and listening to the tapes, I began to think: 'Mm, that's interesting.'. Then I got more involved."
- "[What motivated me to read the first book was] because Tina (wife) had read it. I wanted to know what it was about."
- "It is always Tina and I thinking about things together. We were always talking about things."

4 participation with other people of like interest. Being melancholy personality, Neil possibly needed support from people to provide an external incentive for change.

- "We talked about personality to the extent of what we saw in each other checking out what the book was saying. Tina is a bit more sanguine. She is a bit more outgoing than me."
- "[We listened to the tapes] in the car - whenever we drove anywhere. Driving to work or to the bay to do something. The tapes were different to the books."

The tapes concerned the business of Amway. The tapes were recordings of people who have been successful and how they became successful."

[I got involved] by ringing up people and asking people into the business. Tina would show the business. I would set up the meetings and introduce Tina who would then do the talking. I know a lot of people around town, so I did the ringing.

We actually sat down with the people who sponsored us and wrote exactly what we were going to say so we could simply read it off."

- "Some of the exercises are written i.e., work out goals in your life etc. We (Neil and wife) would do these together."
- "In Amway, you have someone who sponsors you and helps by teaching you how to do the business. This fellow was a very close friend of Tina's - they were school captains in Brisbane. He had the book here one night and we were going through it and we did the questionnaire on personality at about 11.30 or 12 am that night."

5 ambition. Neil and his wife were motivated by the ambition to become rich.

Ambition was the inner drive providing an incentive to change.

- "I suppose we were thinking about the (Amway) business and what we could spend the money on because, basically, the idea of getting into the business was to make money and how I could retire from dentistry and not have to work full time.

We think about houses a lot. Homes seem to be our big motivation - what we can do with the house and how we can renovate the house etc. So I think we were thinking about that as well. It is a two way thing. It is always Tina and I thinking about things together."

6 understanding what was expected of him. Being clear about the task, occurred at the outset of the enterprise for change providing some direction on which to start the change process.

- "Initially, I was drawn to this whole thing because of the business of selling Amway. You have to have a lot of confidence to be able to do that type of business. There is a lot of talking to people about things that you don't really know a lot about. You start off at a low level in the business and you work your way up. You ring people up and say to them: 'Do you want to look at a business?' and that sort of stuff. You are talking to people that you don't really know so you must polish up your speaking skills."
- "My interest was mainly in finding out what my personality was and in them saying that you can work out someone else's personality."

7 reading books, listening and talking to people where Neil searched for and gained knowledge concerning his personality.

- "Reading the books before I go to sleep seems to help stick it in my mind. I can think about things in the morning."
- "(I listened to the tapes) in the car - whenever we drove anywhere. Driving to work or to the bay to do something."
- "I was totally opposed to it to start with. Tina (wife) was the one who got me involved. We went to a few Amway meetings and seeing and meeting other people who were in Amway and reading these books and listening to the tapes."

8 rediscovering reading for enjoyment and knowledge. Reading kindled an interest in personality traits that led to the area in which Neil made the change. The contribution of reading provided the content on which to focus change.

- "My interest was mainly in finding out what my personality was and in them saying that you can work out someone else's personality. You can talk to them and listen and start to work

out other people's personality, how to deal with them and how to say the right things without upsetting them."

- "I then got hooked on it (reading books) and began reading. I would look forward to reading the books. While at work I would be thinking: 'Oh, I'm going to read that book tonight and try and find out more about the ...!'"
- "There are four types of personalities and [the book 'Personality Plus'] is written by one of the personalities that is not really seen as a big motivator. They are the quiet type. That was good for me because I have that type of personality. It was easy for me to read. It was funny as well as educational.
- "There was only reading. You read a lot of it and it sinks in. You're reading every night for about twelve months at least. Not just one book - all the different books. Although, it takes me a long time to read a book. I read more so now than I have ever done before. I was just thinking today that I wouldn't mind getting a novel and reading it. Tina will read two or three books at a time and she can read them quite quickly.
- "My interest was mainly in finding out what my personality was and in them saying that you can work out someone else's personality."

9 relaxing and being free of inhibiting thoughts. Neil was able to concentrate on his reading without distraction. Relaxing contributed by helping him engage in reflection.

- "Yes we used to make sure that we listened to the tapes. Once you've got it in the recorder you listen, but if you didn't you would just listen to the radio. It wasn't as if we would say: 'Yeah! let's go for a drive so we can listen to the tapes!'. After a while when you go for a drive you look forward to listening to the tapes. Because the tapes were of people and what they had done, you would think that that would be good for you to do likewise and get to that level. Then when we get to that level we can make our tape and say that that is what we did."
- "I would read the books just before going to sleep."
- "Reading the books before I go to sleep seems to help stick it in my mind. I can think about things in the morning. They sort of come back to me in the morning. It is still there so I could have been dreaming about it."

10 convincing material. The material helped Neil to develop a sense of expectancy before acting on change.

- "The books are positive motivational things. They are not specifically written for Amway or anything. Some of them have exercises and some pure reading. Some of the exercises are written i.e., work out goals in your life etc. The book 'Personality Plus' had an examination in it. It shows you your personality through the exercise of answering questions.

There are four types of personalities and [the book 'Personality Plus'] is written by one of the personalities that is not really seen as a big motivator. They are the quiet type. That was good for me because I have that type of personality. It was easy for me to read. It was funny as well as educational.

Because Tina (wife) had read it. I wanted to know what it was about. In Amway, you have someone who sponsors you and helps by teaching you how to do the business. This fellow was a very close friend of Tina's - they were school captains in Brisbane. He had the book here one night and we were going through it and we did the questionnaire on personality at about 11.30 or 12 am that night

- "From there I suppose I got interested in reading the book because it seemed to have some good information in it."

- "Tina (wife) was the one who got involved. Going to a few Amway meetings and seeing and meeting other people who were in Amway and reading these books and listening to the tapes, I began to think: 'Mm, that's interesting.'. Then I got more involved."
- "Apart from teaching me about the four types of personalities it taught me how to talk to people and how the personalities intermingle with each other and that you can have a cross section of personalities within one person and how they react with other personalities.

With the four types of personality, if you say something similar to each personality all of them will react differently.

The change in me was due to that book and a combination of everything. It showed me that my personality was 'melancholy' - not that it is a sad personality - it is just that I tend to pay attention to detail and things like that. The personality has mood swings and it showed me how and why I get those mood swings now and then and how to overcome them."

11 **discerning** key points about personality appropriate for change.

- "Reading the books before I go to sleep seems to help stick it in my mind. I can think about things in the morning. They sort of come back to me in the morning. It is still there so I could have been dreaming about it. It is often hard for me to sit down and relax."
- "There are four types of personalities and [the book 'Personality Plus'] is written by one of the personalities that is not really seen as a big motivator. They are the quiet type. That was good for me because I have that type of personality. It was easy for me to read. It was funny as well as educational.
- "There was only reading. You read a lot of it and it sinks in. You're reading every night for about twelve months at least. Not just one book - all the different books. Although, it takes me a long time to read a book.
- "The change in me was due to that book and a combination of everything. It showed me that my personality was 'melancholy' - not that it is a sad personality - it is just that I tend to pay attention to detail and things like that. The personality has mood swings and it showed me how and why I get those mood swings now and then and how to overcome them."

12 **operating within his inherent trait.** Neil's protracted experience and the fact that he tested talk in insignificant situations before trialing talk in a risk situation was consistent with melancholy trait. Neil progressed slowly favouring his characteristic pensive tendencies. If anything, it delayed the breakthrough, but, operating within his comfort zone gave him the freedom to establish confidence in the material before launching out to speak to the motel manager.

- "You read a lot of it and it sinks in. You're reading every night for about twelve months at least. Not just one book - all the different books.

It's probably a gradual awakening rather than immediate. Even when I was applying what I had learnt, it wasn't in an instant. It took a little time to appear."

- "[The breakthrough with talking to the Armidale motel proprietor] happened after I had read the book. I think that that was before I tried it out at work on the people that I already know."
- "We actually sat down with the people who sponsored us and wrote exactly what we were going to say [during the telephone conversations] so we could simply read it off."

13 recognition of personality. Recognition was a cognitive strategy.

- "My interest was mainly in finding out what my personality was and in them saying that you can work out someone else's personality. You can talk to them and listen and start to work out other people's personality, how to deal with them and how to say the right things without upsetting them.
- "Apart from teaching me about the four types of personalities it taught me how to talk to people and how the personalities intermingle with each other and that you can have a cross section of personalities within one person and how they react with other personalities."
- "The change in me was due to that book and a combination of everything. It showed me that my personality was 'melancholy' - not that it is a sad personality - it is just that I tend to pay attention to detail and things like that. The personality has mood swings and it showed me how and why I get those mood swings now and then and how to overcome them."

14 practicing skills over a period of time to establish Neil's confidence.

- "I would say [that my confidence is due to the things that I got from the books] because I haven't really gone back and done any extra study."
- "The change in me was due to that book and a combination of everything."
- "By ringing up people and asking people into the business. Tina would show the business. I would set up the meetings and introduce Tina who would then do the talking. I know a lot of people around town, so I did the ringing."
- "We were going to be professional about it. We were not going to try to talk people into it. If they didn't want to listen that's fine. We actually sat down with the people who sponsored us and wrote exactly what we were going to say so we could simply read it off."

We had success with the meetings because I was ringing the right type of people. We started to get a group of people involved. They ended up not doing anything with it - that's beside the point. Tina would tend to ring people and get few takers where I would ring five people and book three or four meetings.

I would write down all the names of the people that I was going to ring and what I was going to say to each person. At the time, I would write down something different for each person because I knew the people that I was ringing and I thought that I would say something different to each of them. I thought that it might have more impact or get their attention or something. I had an idea of their personalities. Most of the time I could talk to them fairly well. Most people don't want to do it anyway."

- "It didn't happen overnight. It took a month or so before I felt more confident in talking to people. I know, comparing to the way I was about twelve months ago, that I can speak to new patients a lot easier and I don't feel like I'm prying into their lives or something. If you start asking people a lot of questions they may start to think: 'What are you after?'. But if you can ask the right questions you can find out a lot of information and still be on a friendly, not prying basis."
- "I was trying speaking skills. It worked and it just kind of fell into place. I could start talking to people and I found that they started talking to me. It made me feel good."

[The feeling was] that I wasn't just doing a job. I could actually communicate with the people who I consider to be an important part of dentistry. It is also an extremely important part of the Amway business.

- "You can talk to them and listen and start to work out other people's personality, how to deal with them and how to say the right things without upsetting them."

- "It's probably a gradual awakening rather than immediate. Even when I was applying what I had learnt, it wasn't in an instant. It took a little time to appear."

15 the application of book knowledge through a process of colloquialism coaching Neil in the communicative skill of conversation. From testing book knowledge in real situations, Neil developed an approach to people that prepared him (unknown to Neil at the time) to talk with the motel manager in Armidale. Coaching through practice and reinforcement occurred before acquiring practical interactive skills.

- "Talking was when I was out of my comfort zone and that was my breakthrough"
- "Realising that it had changed me in a way and I thought: 'Oh! I'm talking more to the patients' [was important as far as my dentistry was concerned]. I felt more at ease with my work as well as talking with people."

I was trying speaking skills. It worked and it just kind of fell into place. I could start talking to people and I found that they started talking to me. It made me feel good.

[The feeling was] that I wasn't just doing a job. I could actually communicate with the people who I consider to be an important part of dentistry. It is also an extremely important part of the Amway business."

- "I remember talking to Tina about what the patients had said and Tina would reply that I must be talking more with the patients now than before because you're coming home with a lot more information."
- "I learnt the skill of being able to talk to people. Because if you talk to people for a while you can sort of work out their personality and then know what not to say. You can have a feeling about them, but you are usually wrong."

16 a window of opportunity. Neil took the chance while it was available to try his new conversational skill to interact with another person in a risk situation.

- "Usually I push Tina (wife) into talking with the people and paying the bill, but this time I did it. I decided to go in with the point of talking with the fellow. I decided to go in with the point of talking with the fellow. These books tell you that if you start asking questions the people will open up to you."

17 daring. Neil was relaxed, being on holidays, and decided to give it a go. He spoke where, in the past, habitually he wouldn't speak proving his will to act on change. This was the point at which Neil experienced a release of confidence that is seen as the breakthrough in learning to talk with strangers. From this point Neil could distinguish the interaction best suited to his ability having experienced first at breakthrough.

- "We stopped in Armidale on our way down to Sydney. That was the time when I noticed the change."

We stopped in a motel. Usually I push Tina (wife) into talking with the people and paying the bill, but this time I did it. I decided to go in with the point of talking with the fellow. These books tell you that if you start asking questions the people will open up to you. They'll even tell you what is in their bank balance, if you were that cheeky. I started talking to him and he

told me that his brother owned a pub in Rockhampton and was flooded out, etc. I got a whole lot of information in a matter of five minutes and began talking for quite a while. I had never met the fellow before. That was a big turning point. I walked out of there with his card intending to set him up in the business (Amway). The exercise of talk was to see if it would work - it did.

This happened after I had read the book. I think that that was before I tried it out at work on the people that I already know."

- "I am [now] more of a reality type of person and want to do things rather than just knowing about them. I think - that's melancholy trait. I think about things too much - that is my personality."
- "Talking was when I was out of my comfort zone and that was my breakthrough"

18 encouragement from people responding positively to his overtures. Positive responses after breakthrough were arguably powerful motivators that kept him going. He thought: "Oh! I'm talking more to the patients".

- "Realising that it had changed me in a way and I thought: 'Oh! I'm talking more to the patients' [was important as far as my dentistry was concerned]. I felt more at ease with my work as well as talking with people.

I was trying speaking skills. It worked and it just kind of fell into place. I could start talking to people and I found that they started talking to me. It made me feel good.

[The feeling was] that I wasn't just doing a job. I could actually communicate with the people who I consider to be an important part of dentistry. It is also an extremely important part of the Amway business."

- "I remember talking to Tina about what the patients had said and Tina would reply that I must be talking more with the patients now than before because you're coming home with a lot more information."

RESEARCHER'S OBSERVATION AND COMMENTS

Neil's breakthrough occurred immediately he faced up to his fear of people. By trying out the information at the motel in Armidale and at work, he had realised that he could change. The breakthrough, however, played the major role by providing unquestionable evidence that he had the ability to change. After the breakthrough, Neil felt more at ease in the presence of people and found a freedom in making conversation.

Finally, Neil demonstrated his new freedom to talk with people during our interview. He was confident and made me feel at ease to the extent that I felt that I could share personal matters.

The contribution that I see as impacting on the field of adult education is the knowledge of the four cognitive processes and the sequence with regard building the skill base which lead to his breakthrough. The four cognitive processes are reflection, detection, adaptation and application. This knowledge would benefit the practitioner in facilitating a skills base development process.

Norm

PREAMBLE

Norm's breakthrough occurred while at a professional development management seminar. The subject was Risk Management which, in brief, deals with the obligations of organisations to insure that their policies and procedures address matters of safety, health, compensation and insurance. The breakthrough experience occurred during the session that dealt with the topic on insurance.

Norm is a state government employee located at the Maryborough College of TAFE where he works as a safety officer, among other things. Norm is between 55 and 60 years of age.

LEARNING BREAKTHROUGH EXPERIENCE

Norm's breakthrough in learning was comprehending what he read and what was said. He learnt a defined concept to establish a new schema of thinking.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Norm experienced the phenomenon was:

1 non-formal in-service training seminar familiar to Norm.

- "There were other speakers involved - guest speakers - who were providing information with authority on those subjects."
- "...put forward in the group discussion."
- "The venue for the seminar was nothing spectacular. The actual physical resources and classroom were not a modern, up to date sort of room, but, adequate."

2 in a supportive atmosphere, generally friendly encouraging participation and group interaction.

- "It wasn't a threatening sort of atmosphere. It didn't worry me at all from that point of view (hindrance)."
- "...put forward in the group discussion."

- "It was not until after the session finished when we got to speaking with each other that it became apparent that we were still hiding and that we had not understood it."

3 within the **domain of intellectual skill** and requiring cognition.

- "...there was a certain amount of comprehension involved, because in the initial stages I didn't comprehend what was being said. It wasn't until later on when the whole thing was reasoned out that this came into being.

...reasoning was put forward in the group discussion. This started to sum up the situation and to show that insurance had a definite purpose that it wasn't just a case of insurers taking premiums and that you would not be writing out claims as a result of it. There was a reasoning and an evaluation of the whole understanding.

Evaluation came into it, it had to. As you gained the knowledge you could start to evaluate and find the worth of it particularly for me as a college representative. You can not evaluate something that you don't understand."

4 **intellectual discord** causing confusion and conflict between the information expected and the information presented. Confusion led to apathy in the early stage of Norm's learning process.

- "Norm received a pre-reading prior to the seminar which caused him to hold a preconceived understanding of [his] insurance responsibilities within [his] work place.

I was expecting that we would get an understanding of our insurance responsibilities within our work place. That had to come, otherwise it had no bearing on what we were there for. There is always that air of expectancy that goes with the commencement of any seminar."

- "There was nothing concrete other than a pre-reading. But that didn't follow with what he was saying. The pre-reading wasn't consistent with what he did. He didn't relate to our needs."
- "There was a general lack of understanding on where the presenter was actually going."
- "I'm one of those persons, that, if I'm not getting the full benefit from something, I'll sit back and let it ride."
- "...it became more of a group situation as time went on rather than individuals."

5 **an inappropriate presentation**. Such presentation contributed to the intellectual discord that hindered comprehension on the first day.

- "There was good material on the first day. The problem was the way in which it was presented that left us in the dark."
- "I suppose it started during the second day. Certainly by the third day I was on top of it. Tuesday, after things had been explained...and I think in retrospect the insurance side was taken out of its rightful place as far as the agenda of the seminar program was concerned. It should have been later in the program where the more basic elements had been discussed then for it to build up to the insurance. To a certain extent it was putting the cart before the horse."
- "...with the little knowledge that people had they would have been pretty brave to ask questions. There was a general lack of understanding on where the presenter was actually going."

6 **fear** of making a fool of himself. The result was apathy.

- "It was not until after the session finished when we got to speaking with each other that it became apparent that we were all hiding and that we had not understood it."
- "No. We were mainly listening. There wasn't a great deal of opportunity to speak from the floor at that stage. Not only that, but, with the little knowledge that people had they would have been pretty brave to ask questions. There was a general lack of understanding on where the presenter was actually going."
- "The organisers of the course set out with a very deliberate intent to break down the restrictions in the group, particularly at the start. They played a leadership role to create the atmosphere that was desirable."
- "To the extent that the people themselves were starting to talk more freely and therefore the questions and responses... the interaction started to move and that was not there initially on that first day."

7 **apathy.** Norm was uninterested consequently he missed most of the first day's information. Apathy developed into apprehension for meeting his expectations. He became despondent before becoming interested.

- "There was good material on the first day. The problem was the way in which it was presented that left us in the dark."
- "I was expecting that we would get an understanding of our insurance responsibilities within our work place. That had to come, otherwise it had no bearing on what we were there for. There is always that air of expectancy that goes with the commencement of any seminar."
- "Well you become...I suppose it verges on despondency. You're not getting the material that you were seeking and as a result you are disappointed to say the least. I felt that we were let down initially."
- "You don't turn off, but you lose a certain amount of interest because a person is not actually relating to your own needs. You take it in, but you don't really digest it."
- "Arriving on the first day there was a certain amount of apprehension, I wouldn't say tension. It wasn't a friendly relaxed sort of atmosphere where you are going to get the full benefit of a learning experience."

8 **cognitive-dissonance.** Norm's preconceived understanding of insurance blocked learning.

- "Norm received a pre-reading prior to the seminar which caused him to hold a preconceived understanding of [his] insurance responsibilities within [his] work place.

I was expecting that we would get an understanding of our insurance responsibilities within our work place. That had to come, otherwise it had no bearing on what we were there for. There is always that air of expectancy that goes with the commencement of any seminar."
- "As a learning experience it was just another 'mile stone' that had to be negotiated (pass through). Every day life presents some difficulties. First of all you build up in your own mind why you are going to the seminar. Has it got the material that is going to be of benefit? And I suppose you carry a picture in your own mind of what it is that you expect and hope to get."

Norm experienced the phenomenon as:

1 a change in the ease with which he was able to comprehend what was said by the presenters.

- "There was a certain amount of comprehension involved, because in the initial stages I didn't comprehend what was being said. It wasn't until later on when the whole thing was reasoned out that this came into being."
- "I believe it came about because of the opportunity to respond at a level that was understood. Relevant questions were asked and answered. Things started to come together fast."

2 an intellectual activity for acquiring knowledge of insurance principles.

- "[My experience was where I was] able to recognise where the different subject matter came in and supported each other. All those little disjointed bits that were associated with insurance were explained and you could see the relevance of just how they could be applied back into the local colleges."
- "I've had experience with safety and health, that presented no problems and I could accept what was said in those areas because they had application. "
- "...[because] guest speakers - who were providing information with authority on those subjects, it sort of started to come out at those times when one tied in with the other...so it started to mean something."

3 a change in self-concept, having fulfilled what he set out to achieve he had added another dimension to his ability to function as a safety officer.

- "[My experience was where I was] able to recognise where the different subject matter came in and supported each other. All those little disjointed bits that were associated with insurance were explained and you could see the relevance of just how they could be applied back into the local colleges."

Once that happened as an individual I was able to get definitely more confident in my ability to cope with it because if you are in a situation where you don't feel that you are coping you turn off. You must be able to relate to what is going on."

- "I've had experience with safety and health, that presented no problems and I could accept what was said in those areas because they had application."

4 a transformed perspective for thinking about insurance matters and appropriating it to his work.

- "[My experience was where I was] able to recognise where the different subject matter came in and supported each other. All those little disjointed bits that were associated with insurance were explained and you could see the relevance of just how they could be applied back into the local colleges."

Once that (relevance) happened as an individual I was able to get definitely more confident in my ability to cope with it because if you are in a situation where you don't feel that you are coping you turn off. You must be able to relate to what is going on."

- "There was a certain amount of comprehension involved, because in the initial stages I didn't comprehend what was being said. It wasn't until later on when the whole thing was reasoned out that this came into being."

- "You sort of have a limited understanding of something and when it is spelt out then you reach a time when you say: 'Yes well all right, I have known that part of it, these other items are things that I didn't know but I can add to what I've already got.'"

5 an intellectual skill to apply an insurance principle to a risk management simulated situation.

- "After the breakthrough I started to feel that I could contribute. You say: 'Well all right this can be applied and we have something to hold onto and to work on.'"
- "By the time we got to the third day ...the whole thing was building up toward a risk management mock-up activity. We were all fairly clued up by the time the trial was introduced. The trial was for us and what was expected of us as employers in relation to 'Risk Management'".

6 An intellectual skill to make propositions about the purpose of the information.

- "All those little disjointed bits that were associated with insurance were explained and you could see the relevance of just how they could be applied back into the local colleges."
- "You sort of have a limited understanding of something and when it is spelt out then you reach a time when you say: 'Yes well all right, I have known that part of it, these other items are things that I didn't know but I can add to what I've already got.'"

What is seen as contributing to the phenomenon is:

1 information able to be apprehended through simplified language. Norm's response was acceptance of the material provided.

- "I suppose it started during the second day. Certainly by the third day I was on top of it. Tuesday, after things had been explained.. later in the program where the more basic elements discussed then for it to build up to the insurance."
- "In my situation, I was able to say that I deal with it more freely once I accepted it. In the initial stage it was like just so much waffle."
- "The questions came from the course organisers because they could see that it (content) was a bit above us."
- "Because of the type of information that was given, I believe it came about because of the opportunity to respond at a level that was understood. Relevant questions (relevant to our various applications) were asked and answered. Things started to come together fast."
- "It was on the second day that the organisers took the thing in their own hands to rectify the situation and bring the group to a point where they could participate. They realised that people were not getting any satisfaction and as a result they rectified it on the second day. By the third day things were back on track."

2 ownership of the material (i.e., 'this is for me'). Norm was consequently more receptive and attentive to the content given at the seminar. Ownership is seen as a prerequisite to relaxing into the task. Norm was no longer hindered by indecision about material. Ownership helped him accept as sound what presenters said.

Acceptance tended to relax him, freeing him from anxiety with the consequence of him being able to process information at a higher level.

- "[I took control of my learning by becoming] more receptive to what was going on and I became more willing to participate.
- "Acceptance did occur. This applies to just about every one's learning experience. Look at any class of students and if a student hasn't accepted what has been said you can see them turn off. They will find some other creative way of passing the time. There has got to be that acceptance and willingness to accept."
- "[I took control of my learning by becoming] more receptive to what was going on and I became more willing to participate. I'm one of those persons, that, if I'm not getting the full benefit from something, I'll sit back and let it ride. However, if it is something that I am attuned to, I'll sit up and participate more readily - not forced to participate. A lot of the different representatives were named to present a response so that it became more of a group situation as time went on rather than individuals."
- "As a learning experience it was just another 'mile stone' that had to be negotiated (pass through). Every day life presents some difficulties. First of all you build up in your own mind why you are going to the seminar. Has it got the material that is going to be of benefit? And I suppose you carry a picture in your own mind of what it is that you expect and hope to get."

3 respect for the successful background experiences of guest speakers. It drew Norm's attention, making him aware of significant and sound information.

- "[There were no activities to the]...point where I began to understand it. Alexander Stenhouse was very conscious of the needs of the students."
- "...[because] guest speakers - who were providing information with authority on those subjects. Those people who deal with evaluation and loss areas of insurance claims, you know, forecasting loss areas. It sort of started to come out at those times when one tied in with the other...so it started to mean something. That was possibly the beginning where I could see that there was a purpose served in the previous session. Up to that point it was very much in the air."

4 reinforcement of verbal communication achieved by the presenters through consistent positive non-verbal mannerism. This was influential in drawing attention to what was said, and what that was said was 'sound'.

- "To a certain extent the breakthrough came as much from the non-verbal as the discussion. By sitting back listening to what was being said as much as taking part in it."

5 the process facilitator's sensitivity to the need for group participation. The conduct of the seminar changed to more discussion rather than lecture, helping Norm become attuned to presenters and the material.

- "The questions came from the course organisers because they could see that it (content) was a bit above us."
- "Alexander Stenhouse was very conscious of the needs of the students."
- "It was on the second day that the organisers took the thing in their own hands to rectify the situation and bring the group to a point where they could participate. They realised that

people were not getting any satisfaction and as a result they rectified it on the second day. By the third day things were back on track."

- Norm was impressed by Alexander Stenhouse who conveyed a sense of "Yes, you are on the right track" as opposed to the presenter on the first day whose mannerism was one of "Touch me not". "Stenhouse", Norm said, "persuaded us".
- "Stenhouse recognised the fact that there was something wrong. This came about through him moving around amongst the group at tea times. Stenhouse was running the course."
- "The speakers who represented (Alexander Stenhouse) lead the discussion and brought it back into our areas of work and thinking."

6 Norm becoming attuned to activities and people within the group. He began to interact with others.

- "[Interaction assisted breakthrough] to the extent that the people themselves were starting to talk more freely and therefore the questions and responses...the interaction started to move and that was not there initially on the that first day."
- "[I took control of my learning when] I became more receptive to what was going on and I became more willing to participate."

7 group interaction where participants functioned as a group rather than as individuals within the group. Norm became relaxed and responsive to information, sharing activities.

- "The organisers bonded the group and that was a necessary part. They started off with that on the first day with introductions to try and insure that people accepted them, but, that was shot down later in the day and they had to rebuild the bonding."
- "[Norm describes the second day as] "...a change brought about by the organisers of the course who set out with a very deliberate intent to break down the restrictions in the group, particularly at the start. They played a leadership role to create the atmosphere that was desirable...interaction started to move and that was not there initially on that first day.

It relaxed me and the faster that you get to know people the faster people start to respond and interact together."

- "Discussion time was the area where I felt that I began to understand what was said."

8 a relaxed mood. Relaxing helped Norm become more responsive through being intellectually alert.

- "The organisers of the course set out with a very deliberate intent to break down the restrictions in the group, particularly at the start. They played a leadership role to creating the atmosphere that was desirable.

It relaxed me and the faster that you get to know people the faster people start to respond and interact together."

- "It wasn't a threatening sort of atmosphere."
- "Only that I became more receptive to what was going on and I became more willing to participate."

- "I've had experience with safety and health, that presented no problems and I could accept what was said in those areas because they had application."

9 rehearsing propositions to test them against ideas provided by the presenters and others within the group. This was a cognitive strategy used to build Norm's schema for thinking about insurance as it applies to him.

- "Because of the type of information that was given, I believe it came about because of the opportunity to respond at a level that was understood. Relevant questions (relevant to our various applications) were asked and answered. Things started to come together fast."
- "It was on the second day that the organisers took the thing in their own hands to rectify the situation and bring the group to a point where they could participate. They realised that people were not getting any satisfaction and as a result they rectified it on the second day. By the third day things were back on track."
- "You sort of have a limited understanding of something and when it is spelt out then you reach a time when you say: 'Yes well all right, I have known that part of it, these other items are things that I didn't know but I can add to what I've already got.'"

10 Norm's task orientation. Norm has a sense of duty as college safety officer and a responsibility to learn all he can to help perform in that capacity.

- "I was expecting that we would get an understanding of our insurance responsibilities within our work place. That had to come, otherwise it had no bearing on what we were there for."
- "I looked at [my motives while at the seminar as being professionally related i.e.,] as being part and parcel of the safety requirements of the college. What I wanted to do was to add to my experience of safety which was the risk and how to actually cope with that to lessen illness, accident, etc."

11 multiple incidences. His whole breakthrough experience was a gradual process building confidence and knowledge before his breakthrough encounter.

- "[The breakthrough was not a particular incident] it was over a number of things that came about. There were several types of things, it was a chain reaction right through the group. Once it started answers were understood and within a matter of a short time the whole of the group was breaking through."

12 a cognitive strategy of inductive reasoning to make sense of material, upon which he made the connector between his original schema of thinking and the new schema that the seminar presented. The realisation of the connection is seen as Norm's breakthrough encounter.

- "It wasn't until later on when the whole thing was reasoned out that (comprehension) came into being."
- "Reasoning was put forward in the group discussion. This started to sum up the situation and to show that insurance had a definite purpose that it wasn't just a case of insurers taking premiums and that you would not be writing out claims as a result of it. There was a reasoning and an evaluation of the whole understanding."
- "It sort of started to come out a times when one tied in with the other. How one particular element fitted and locked in and its dependence on another to get the overall picture on how risk management was to function from the administration side to the engineering side of

things and the safety program of prevention as much as anything. Then we went through the elements that were associated on the risk side of it and how to guard against risk. This is where the insurance came into it. To insure against risk."

13 distinguishing material of possible worth from material of no or little worth.

This intellectual skill provided a method for Norm to reduce to manageable chunks the information given to him in the seminar.

- "In regards to prior knowledge of the subject, Norm replied: "Only to a certain extent. If you know it all you shouldn't be there. It highlighted things that I already knew, but it also brought in other factors that I wasn't aware of or conscious of. You sort of have a limited understanding of something and when it is spelt out then you reach a time when you say: 'Yes well all right, I have known that part of it, these other items are things that I didn't know but I can add to what I've already got.'"
- "I've had experience with safety and health, that presented no problems and I could accept what was said in those areas because they had application. "
- "As a learning experience it was just another 'mile stone' that had to be negotiated (pass through). Every day life presents some difficulties. First of all you build up in your own mind why you are going to the seminar. Has it got the material that is going to be of benefit? And I suppose you carry a picture in your own mind of what it is that you expect and hope to get.
- "[My experience was where I was] able to recognise where the different subject matter came in and supported each other. All those little disjointed bits that were associated with insurance were explained and you could see the relevance of just how they could be applied back into the local colleges. Once that happened as an individual I was able to get definitely more confident in my ability to cope with it (insurance principles) because if you are in a situation where you don't feel that you are coping you turn off. You must be able to relate to what is going on."

14 a process for encoding information through evaluating the applicability of material in a realistic work situation. This led to the intellectual skill of conceptualising new material with his schema for understanding insurance as it applies to safeguards in the administration of safety back at the college. The skill was developed through applying theoretical information to real life situations.

- "I [evaluate] as I go along. You get a sense of the aims and purpose from the organisers. You get this from the experience of attending seminars. You tend to ask yourself where are we being directed and at that point you ask: "What are we trying to achieve?".
- "Evaluation came into it, it had to. As you gained the knowledge you could start to evaluate and find the worth of it particularly for me as a college representative."
- "By the time we got to the third day ...the whole thing was building up toward a risk management mock-up activity. We were all fairly clued up by the time the trial was introduced. The trial was for us and what was expected of us as employers in relation to "risk Management".
- "The more you understand a particular topic the better the chances are that you can grasp it and use it in an enlightened sense. To make a tool of it you have to have sufficient understanding of it. You can not use something that you don't understand. To make a tool out of it you have to have sufficient understanding of it."
- "After the breakthrough I started to feel that I could contribute. You say: Well all right this can be applied and we have something to hold onto and to work on."

- [Although Norm was alluding to the fact that he was being helped by expert people of the legal profession he said that he performed his part in the mock trial with, and I quote:] "...a fair amount of confidence."

RESEARCHER'S OBSERVATIONS AND COMMENTS

Norm's breakthrough experience is seen more in terms of a protracted learning experience with a time of enlightenment rather than one 'Aha!' or 'Eureka' experience. The breakthrough was not a mystical flash 'out-of-the-blue' there were many factors which indirectly influenced the preparation or pre-conditions. He describes his experienced as moments (plural) where comprehension was happening quickly. However, Norm referred to the enlightening moments - all of them - as his one breakthrough in learning experience. As revealed in the above interpretation, however, there was an eventful moment that stands out. It was the moment that Norm realised that he had comprehended the material presented and a connection was made between what he originally understood and what was new information. This was the start to becoming enlightened (as he put it) and interpreted by me as his moment of learning breakthrough.

The breakthrough that Norm described was obviously a memorable one because he related to details that occurred one year ago. When asked to revisit the experience a second time, after a few weeks had elapsed, he related the events almost verbatim from the first interview. The breakthrough was obviously impressed on his memory.

The point in the experience which turned a bad situation into a positive learning influence is probably seen as the most beneficial aspect of Norm's experience for the field of adult education. Conflict resolution through the sensitivity of the facilitators set the conditions for Norm's breakthrough. The process facilitators, (seminar organisers not the presenters), took Norm out of a tense situation into a relaxed participative situation that was compatible with his preferred instinctive style of learning which was active engagement (7 above) i.e., trialing, questioning, reading handouts, reflecting and at a times discussing not just listening and note taking.

From my knowledge of Norm, he comes across as a meticulous person who works methodically and is thorough in all that he produces. I can understand why Norm could be long winded about coming to an understanding. He would want everything to fit exactly into his personal schema of thinking before he would admit to knowing (to himself or others). I could easily describe Norm as an introvert who prefers to learn reflecting on knowledge. However he seemed to come out of that mould briefly

during the trial simulation, having a desired effect of reinforcing his ability and confidence in applying his new knowledge of the subject.

Tina

PREAMBLE

Tina is a 31 year old mother of three young children. Her experience of a learning breakthrough occurred in 1981 while taking singing lessons. Tina is now an accomplished singer, having sung in choirs and concerts. At the time of her breakthrough, Tina was working as a primary school teacher.

LEARNING BREAKTHROUGH EXPERIENCE

Tina's breakthrough was discovering her upper register for singing high notes clearly. She learnt a motor skill of sound making to trigger a reflex muscle movement within her mouth, tongue and throat to sing high notes unrestricted. Her learning breakthrough was a physical skill.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Tina experienced the phenomenon was:

- 1 non-formal disciplined singing lessons** where she was trained to strengthen her breathing and vocal capabilities.
 - "My lessons were after work so they were between 6.30 and 7.30pm."
 - "[I was] standing, always standing hands in front. Standing by the piano next to her."
 - "I had lessons for about eighteen months and this was probably a couple of months into my lessons."

- 2 experimenting**, by singing as the opportunity arose to provide feedback and practice.
 - "We used to get together on a Sunday afternoon for a recital with all the students, but it wasn't until the next year that I went in to the cisteddfoed. I wasn't practicing for anything in particular at the time of the breakthrough."
 - "I didn't know what the difference was until I had learnt it myself. I then said: 'Ah! ha! that is it!'"

- "Afterwards, when ever I heard anyone sing I could then say that that is the difference between someone who has learnt and someone who hasn't learnt singing."
- "It just happened in the studio one day and that was it. It wasn't until I did it myself that I realised."
- "During the lesson the teacher would try and describe how my throat should feel and how the air should not be pushed around my mouth and up through my nose. I would sit there and not understand a thing that she was describing. I had no idea of what she was getting at. I'd try to do it and when I couldn't I would think: 'that she is going to think that I'm an idiot!'"

3 conducive atmosphere for learning. The studio was set up for the purpose, lessening distractions and minimising unnecessary interference.

- "I was in a studio. A small twelve foot square room with the teacher - she was there basically all day and all night. It was in Queens Street Brisbane above a Night Club and you would go up the elevators and there was a whole row of studios, a big corridor, walk pass doors where people were singing and doing all sorts of things like that. I was just in one of the room."

4 Tina unclear about her goal. Singing in the upper register was puzzling, because, having heard the sound Tina did not know what it was and how it was made.

- "Before I found the technique myself, I could tell when someone had not been trained and the difference between someone who had and someone who hadn't. I didn't know what the difference was until I had learnt it myself."
- "I could always tell if someone had lessons, but I didn't know why I could tell that they had lessons."
- "I didn't know what the difference was until I had learnt it myself. I then said: 'Ah! ha! that is it!'"
- "I don't know. It felt comfortable where as before I knew - I didn't know that I didn't know that I couldn't do something - that I couldn't do something that other people could do."
- "Because I didn't know what I was learning, I didn't know what I was aiming for. So how would you know when you got there if you don't know where you were going."
- "I suppose I didn't realise what I had learnt until twelve months after or even what she (teacher) was getting at."
- "I'd watch what she (teacher) was saying and I'd try and understand what she meant, but I just couldn't get it and then felt good after I had eventually got it."
- "During the lesson the teacher would try and describe how my throat should feel and how the air should not be pushed around my mouth and up through my nose. I would sit there and not understand a thing that she was describing. I had no idea of what she was getting at. I'd try to do it and when I couldn't I would think: 'that she is going to think that I'm an idiot!'"
- "It seemed like...let me explain. I can't understand it when you look into a painting and it is like a mess. I can not comprehend what other people see in it. This seemed like the same thing. She was telling me all these things and I just couldn't get what she meant until I did it then I realised what she meant."
- "[You change the shape of your throat, etc]. No one ever actually explained that that is what I was not doing."

- "I didn't really know. You know normally you have an objective and you strive toward that objective and you know where you are heading, but I really didn't know that that was what I was going to learn. It wasn't until after it that I knew that that is what I needed to learn."

5 a resilient disposition, providing the conditions for change. She would 'bounce' back after disappointment.

- "I'd try to do it and when I couldn't I would think: 'that she is going to think that I'm an idiot!'"

Tina experienced the phenomenon as:

1 a transformation of her fine motor ability. For example, a similarity is the eye lid closing if grit is in the atmosphere. Similarly, the soft palate lifts and the tongue drops flat when triggered on cue. Once Tina recognised the sensation of singing high from the use of her upper register, she could repeat the process at will.

- "It was a physical coming together of what she (teacher) had told me and what I put into practice were the things that she described i.e., to move my throat and voice box and everything."
- "I knew that there was something that I couldn't really grasp. I just did it, being able to sing high without singing loud - surprise surprise. The teacher stopped me and said that that sounds right and then it clicked - I had realised that I had done it right."
- "It is the vocal cords and your tongue and the way that you form your mouth. You kind of actually push your tongue right down low onto the bottom of your throat and open up and have an 'O' shaped mouth but with a bit of a smile. That is how you do it."
- "I just did it - surprise surprise. Before the break I didn't make a change i.e., I didn't lower my tongue to the bottom of my mouth/throat whatever part it is. It is right back in your throat."
- "Up until then I had never sung an 'F' above middle 'C' in public because being a perfectionist, if I can't sing it perfectly I don't sing it (type of thing). I was singing the 'E' above that and I just couldn't believe it. It made me feel so good - so proud of myself."

I love to sing songs like 'Vilia' that go really high. Just the challenge of it. I just like doing it.

The challenge before the breakthrough was trying to find what she was talking about. I'd never even thought about being a soprano up until then because I thought that I was an alto and that I can't sing high. I didn't know that I could do it. It changed a lot of things."

2 an ability to understand the process of projecting sounds freely in the upper register. This was a form of aesthetic impression of what she had done physically.

- "It is the vocal cords and your tongue and the way that you form your mouth. You kind of actually push your tongue right down low onto the bottom of your throat and open up and have an 'O' shaped mouth but with a bit of a smile. That is how you do it."

- "Prior to that, whenever I tried to sing higher, I just tried to sing louder instead of using this technique."
- "Before the break I didn't make a change. Before I had to sing loud to sing high. Now I can sing higher and not sing loud."
- "Before the break I didn't lower my tongue to the bottom of my mouth/throat whatever part it is. It is right back in your throat. I got fairly high, but it sounded quite loud instead of controlling it more. Part of this was controlling the volume and all that sort of thing."
- "That was the biggest thing that I had learnt. There is so much to be learnt about singing. You could learn about singing till the day you die and still not know it all."
- "If I hadn't learnt that (to use the upper register), I could not have sung as high as I can now. To me being able to do that is almost the crux of singing more than being able to hold your breath. Without being able to do that you can not sing high musically. It sort of makes a noise but it is not a musical sound which is pleasant to the ear. I know that my upper register has a pleasant sound to it."
- "After a couple of months during one lesson I must have done it and the teacher said: 'Yes, that is what you do!'"

3 a change process of making the sound, being informed and then realising the difference.

- "I knew that there was something that I couldn't really grasp. I just did it, being able to sing high without singing loud - surprise surprise. The teacher stopped me and said that that sounds right and then it clicked. I had realised that I had done it right."
- "I felt a bit of a sense of achievement. That is the one thing out of my eighteen months of lessons that I remember the most, was learning how to do that."
- "Up until then I had never sung an 'F' above middle 'C' in public because being a perfectionist, if I can't sing it perfectly I don't sing it (type of thing). I was singing the 'E' above that and I just couldn't believe it. It made me feel so good - so proud of myself."

4 a transformation of her voice range. Tina was alto because she could not access her top register. She is now mezzo soprano.

- "I was always considered an alto and always thought of myself as an alto because I thought I couldn't sing high. I didn't know how to change my register so I would sing alto louder. After this breakthrough I realised that I was actually a soprano and she (the teacher) said to me all along that I was a soprano. It was funny because a girlfriend and I went to the same teacher and we had sung together for years and she always did the high parts while I did the low parts, but, after this she did the low parts and I did the high parts."
- "Up until then I had never sung an 'F' above middle 'C' in public because being a perfectionist, if I can't sing it perfectly I don't sing it (type of thing). I was singing the 'E' above that and I just couldn't believe it. It made me feel so good - so proud of myself."

What is seen as contributing to the phenomenon is:

1 manipulating her voice by trailing sounds.

- "It all comes down to being able to get from your lower to your higher register."

- "It is right back in your throat. Because of that, it must be that particular thing that you do that allows you to sing higher."
- "It is sort of like learning to ride a horse. To me it was the same sort of learning that rising to the trot is. You know when you've done it. It's like the accelerator and clutch on the car you know when you've done it right."
- "During the lesson the teacher would try and describe how my throat should feel and how the air should not be pushed around my mouth and up through my nose."
- "The one thing now, looking back, that what I couldn't do was to change from the lower register to the higher register. There are two different ways in which you can sing. You do all your low notes a certain way then you change the shape of your throat or the shape of your vocal cords to get to the higher register."

2 Tina's search for self-actualisation. Tina's inner drive was to succeed at something worthwhile and be the best. The prospect of entering an unknown area of singing also motivated Tina, seen as her incentive to participate in professional lessons.

- "I am a high achiever and when I can't grasp something straight away I think that I am an idiot. It wasn't just the thrill of doing it I thought: 'Finally, I'm not stupid I can now really relate to what she is saying.'. I feel that if I can't grasp something, I feel that I should be able to.

It was such a sense of achievement when I did it. I knew then that I could do it like other people."

- "[What kept me going to lessons was that] There is so much to be learnt about singing. You could learn about singing till the day you die and still not know it all. It is just something that I knew that I could do and do well. If I have lessons I am constantly using my voice. I am proud of my voice (kind of thing). I enjoyed it. I love it and I'm going to do more this year. It is something that I like doing
- "I find it a challenge to sing as high as I can. I want to get back into singing now because my range has dropped off because of lack of practice. I have a nice voice and it sounds nice. I can sing beautiful clear notes up high and just enjoy the thrill of doing that. It gives me goose bumps.

Up until then I had never sung an 'F' above middle 'C' in public because being a perfectionist, if I can't sing it perfectly I don't sing it (type of thing). I was singing the 'E' above that and I just couldn't believe it. It made me feel so good - so proud of myself.

I love to sing songs like 'Vilia' that go really high. Just the challenge of it. I just like doing it.

The challenge before the breakthrough was trying to find what she was talking about. I'd never even thought about being a soprano up until then because I thought that I was an alto and that I can't sing high. I didn't know that I could do it. It changed a lot of things."

- "I could always tell if someone had lessons, but I didn't know why I could tell that they had lessons. It was such a sense of achievement when I did it. I knew then that I could do it like other people.

3 is an incentive to learn. Enjoyment played a part in Tina taking singing lessons, but, her periodic achievements were a motivating influence. An incentive is seen as a prerequisite to learning at the crucial time when she was faced with a dilemma and could have given up.

- "I can sing beautiful clear notes up high and just enjoy the thrill of doing that. It gives me goose bumps."
- "Before I found the technique myself, I could tell when someone had not been trained and the difference between someone who had and someone who hadn't."
- "I had lessons for about eighteen months and this was probably a couple of months into my lessons. We used to get together on a Sunday afternoon for a recital with all the students, but it wasn't until the next year that I went into the eisteddfod. I wasn't practicing for anything in particular at the time of the breakthrough."
- "[What kept me going to lessons was that] There is so much to be learnt about singing. You could learn about singing till the day you die and still not know it all. It is just something that I knew that I could do and do well. If I have lessons I am constantly using my voice. I am proud of my voice (kind of thing). I enjoyed it. I love it and I'm going to do more this year. It is something that I like doing"
- "Yes, the teacher stopped me and said that that sounds right and then it clicked. I had realised that I had done it right."
- "I would have kept going anyway. Certainly doing it made me want to keep doing it once I knew that I could do this thing. I could hear myself improving. That was its own reinforcement to keep going."

4 is the model of accomplished singers that she admired. She had a standard on which to emulate and a vision on which to be guided. She knew that she could sing in tune, but, she wanted to sing like the singers she admired. Such a model was inspiring.

- "Before I found the technique myself, I could tell when someone had not been trained and the difference between someone who had and someone who hadn't. I didn't know what the difference was until I had learnt it myself."
- "You know, as a kid, I would stand with a hair brush and imagine it to be a microphone and sing all the time and try and sound like others, but I didn't really know what they did that made it sound different."

5 the quiet reserve disposition of the teacher. The teacher did not discourage Tina even though Tina was not singing to potential. Tina, in response, was encouraged to feel that she was achieving her goal contributing to her continuing participation during the more difficult periods of her training.

- "She was an excellent teacher and she never made me feel frustrated."
- "She was a good teacher, but, if I go to an eisteddfod I'll listen and think that one person was great and they wouldn't win (type of thing), so I don't know that I am qualified to judge how good she (teacher) was but she was always patient and never made you feel that you hadn't understood. You would just keep going and then you would play back your tapes after the lesson and think: 'Oh, that was really awful.'. She would never say anything. She would always say: 'Keep going.' However, half the lesson was spent talking. She was a bit eccentric."
- "I suppose it was frustration, but not much. She was an excellent teacher and she never made me feel frustrated."
- "I was being guided more than anything to the point where I learnt it and then I was right."

6 reinforcement from positive comments by the teacher. Tina discovered a clue on how the sound was produced. The sense of singing differently was firstly an awareness that she was not doing what the teacher described, but initially she was oblivious to upper register.

- "The one thing now, looking back, that I couldn't do was to change from the lower register to the higher register. There are two different ways in which you can sing. You do all your low notes a certain way then you change the shape of your throat or the shape of your vocal cords to get to the higher register. No one ever actually explained to me that that is what I was not doing."
- "I didn't know what the difference was until I had learnt it myself. I then said: 'Ah! ha! that is it!'"
- "After a couple of months during one lesson I must have done it and the teacher said: 'Yes, that is what you do!'"
- "Afterwards, when ever I heard anyone sing I could then say that that is the difference between someone who has learnt and someone who hasn't learnt singing."
- "I just did it - surprise surprise. The teacher then reacted with: 'That's right! now, that is what we have been talking about!'. Then I knew."

Yes, the teacher stopped me and said that that sounds right and then it clicked. I had realised that I had done it right."

- "I guess it was her initial response that caused me to realise that I had done it right. I think, without her saying anything, overtime I would have realised because it just felt right and sounded better. Every lesson is taped, so, I could hear that it sounded right."
- "I would have kept going anyway. Certainly doing it made me want to keep doing it once I knew that I could do this thing. I could hear myself improving. That was its own reinforcement to keep going."

7 musical accompaniment providing the cue on which Tina could anticipate higher notes to practice stretching her voice limits and to timbre her voice. A piano was used. Piano accompaniment was a co-requisite with scales and exercises.

- "A piano was playing at the time. It was just an exercise. I can't remember the exercise. I mean it was Bel canto technique [tone], but I don't remember the particular exercise. The teacher just accompanied me. I wasn't a song."

8 scales and exercises. Scales and exercises shaped Tina's voice, extending and conditioning her vocal capacity to transfer voice sounds to arias and songs. Scales and exercises were a co-requisite with piano accompaniment.

- "[I could practice the exercises before my breakthrough], but, they didn't sound as good. If all the notes were in my lower register, I could have done it and it would have sounded OK, but, as soon as I got up a bit I just sang louder and it sounded terrible."
- "What most people think of when you go and have singing lessons is that you only learn breathing techniques and how to hold your breath for a long time. That was what I thought. However, what you get is a whole lot of different exercises."

- "There was no particular tune, it was just one of the exercises. There is a book of exercises which are written in Italian. It is in Italian because their vowel sounds are better, but, I think the exercise that I was doing at the time was not even one of those. I think it was a scale or something. It was something that I had sung previously, same piano, same room."
- "I think that I had done some exercises and we were going through the lesson where she was telling me what to do and I was thinking: 'Oh! what an idiot because I couldn't figure out what she was talking about.'. Then I happened to do it right and then I knew that I did it right and that was it."

A piano was playing at the time. It was just an exercise. I can't remember the exercise. I mean it was Bel canto technique [tone], but I don't remember the particular exercise. The teacher just accompanied me. It wasn't a song."

9 observing the position of the teacher's fingers on the piano keys contributed to Tina pre-empting the next note; coaxing her to use upper register. The expectation of a high note was a challenge.

- [Tina said later that she remembered watching the pianist's hands to alert her to the note.]

10 a challenge to attempt difficult notes contributing to Tina lifting her voice and finding the upper register.

- [Tina said later that she remembered watching the pianist's hands to alert her to the note.]

11 feedback from her singing. Hearing herself on tape provided information about her progress and on what to practice. Feedback was a check point in her progress.

- "You would just keep going and then you would play back your tapes after the lesson and think: 'Oh, that was really awful!'. She would never say anything. She would always say: 'Keep going!'"

12 familiarity with the tunes and scales used to exercise Tina's voice. Without having to learn new scales and tunes she was free to concentrate effort on vocal projection. Familiarity promoted the freedom to be natural and spontaneous.

- "[The tune] was something that I had sung previously, same piano, same room. It was something that I would have sung wrongly previously. Subconsciously, I think, all the things that I had been told up to then - now knowing how it feels - I was able to do them."
- "I had lessons for about eighteen months and this was probably a couple of months into my lessons. We used to get together on a Sunday afternoon for a recital with all the students, but it wasn't until the next year that I went into the cistiddfod. I wasn't practicing for anything in particular at the time of the breakthrough."

13 self-pacing. Tina was not pressured. She had time to develop her voice and learn to relax into singing.

- "She was an excellent teacher and she never made me feel frustrated."
- "I wasn't pressured. If it had been something for an exam I would have been because I'm that type of person that had to get one hundred percent. This was something that I did for pleasure. I was there to learn. I didn't get angry or frustrated by it."

- "...she was always patient and never made you feel that you hadn't understood. You would just keep going and then you would play back your tapes after the lesson and think: 'Oh, that was really awful.'. She would never say anything. She would always say: 'Keep going!'"

14 relaxing into the task. Similar to having to relax to experience a knee jerk, Tina had to relax into projecting her voice. A relaxed state is seen as a prerequisite of free flowing notes when singing.

- "After a couple of months during one lesson I must have done it and the teacher said: 'Yes, that is what you do!'"
- "I don't know. It felt comfortable whereas before I knew...I didn't know that I didn't know that I couldn't do something - that I couldn't do something that other people could do. After the break it felt right."
- "Everything I did, felt like the thing that she had described and I knew it sounded right and of course she reinforced it by saying: 'great', and then I knew. I felt a bit of a sense of achievement. That is the one thing out of my eighteen months of lessons that I remember the most, was learning how to do that."
- "I just happened to do it once the right way then I knew and that was it."

15 experience of singing for most of her life and taking singing lessons for a number of months. Her breakthrough was not a chance occurrence.

- "What probably contributed to the breakthrough was all the knowledge up to that point then it just all fell together. I think perhaps that it almost happened accidentally. If I hadn't had all those lessons before hand it may not have happened. Right now it felt like it happened afterwards when I received the reinforcement because I remember what she said."
- "It was a physical coming together of what she had told me and what I put into practice were the things that she described i.e., to move my throat and voice box and everything."
- "Right now it felt like it happened afterwards when I received the reinforcement because I remember what she said. It was a lot of little things. It was almost...not an accidental thing, it was...well like some people would describe luck, but, luck is not really any such thing because a lot of circumstances contribute to that and it is perceived as luck. This to me was a similar thing. All the things that I had learnt to that point got me to that point and not stumbled on to it accidentally. After that there was a lot of reinforcement."

16 a clarification for herself of what the teacher was describing. Having had the feeling she became aware that the sound came from spontaneity as much as muscular reflex. It was also an aesthetic impression of singing sweetly.

- "I didn't really know. You know normally you have an objective and you strive toward that objective and you know where you are heading, but I really didn't know that that was what I was going to learn. It wasn't until after it that I knew that that is what I needed to learn."
- "During the lesson the teacher would try to describe how my throat should feel and how the air should not be pushed around my mouth and up through my nose. I would sit there and not understand a thing that she was describing. I had no idea of what she was getting at. I'd try to do it and when I couldn't I would think: 'that she is going to think that I'm an idiot!'"
- "It seemed like...let me explain. I can't understand it when you look into a painting and it is like a mess. I can not comprehend what other people see in it. This seemed like the same thing. She was telling me all these things and I just couldn't get what she meant until I did it then I realised what she meant."

- "After a couple of months during one lesson I must have done it and the teacher said: 'Yes, that is what you do.'. Then I realised that what she had said was right. I had put it all together at the right time. That was when I realised that that is how to do it. From then on I was able to do it."

17 automatic response instead of an intellectual response. Neutralising interfering processes of the mind resulted in spontaneity and access to the upper register. Tina responded to cues within the music itself rather than her own cognitive strategies or intellectual skills (she learnt to unlearn wrong influences).

- "It just happened in the studio one day and that was it. It wasn't until I did it myself that I realised."
- "She was telling me all these things and I just couldn't get what she meant until I did it then I realised what she meant."
- "Before I found the technique myself, I could tell when someone had not been trained and the difference between someone who had and someone who hadn't. I didn't know what the difference was until I had learnt it myself. I then said: 'Ah! ha! that is it!'"
- "Looking back, I have since been told by someone else that, you just form your throat and mouth as if you were about to vomit. That might be a crude way of putting it, but, that is exactly what you do."
- "After a couple of months during one lesson I must have done it and the teacher said: 'Yes, that is what you do.'. Then I realised that what she had said was right. I had put it all together at the right time. That was when I realised that that is how to do it. From then on I was able to do it."

18 associating upper register with motor reflex. The upper register is a fine motor discrete complex movement of the muscles in the back of the throat. Tina associated intellectually what had been an experience of singing in the upper register.

- It is the vocal cords and your tongue and the way that you form your mouth. You kind of actually push your tongue right down low onto the bottom of your throat and open up and have an 'O' shaped mouth but with a bit of a smile. That is how you do it."
- "It just happened in the studio one day and that was it. It wasn't until I did it myself that I realised."
- "Looking back, I have since been told by someone else that, you just form your throat and mouth as if you were about to vomit. That might be a crude way of putting it, but, that is exactly what you do."
- "It was a physical coming together of what she (teacher) had told me and what I put into practice were the things that she described i.e., to move my throat and voice box and everything. I just happened to do it once the right way then I knew and that was it."

19 kinaesthetic. The perceived feeling of effortless fine motor function represents Tina's breakthrough experience. The phenomenon was a conditioned response (described above) to the cues in the music, accompaniment, coaching, and her own experiences.

- "After the break it felt right. I suppose that if I had done it a few times I would have worked it out. She (teacher) actually never said that that is what I was learning or that is what I had learnt. It is my interpretation of what it was. It took a couple of months for it to really sink in. Whenever I would hear people sing I would comment: 'That's why.'. It kept coming back to me that I could relate future experiences to that one particular thing."
- "I don't know. It felt comfortable where as before I knew...I didn't know that I didn't know that I couldn't do something - that I couldn't do something that other people could do."
- "Before I found the technique myself, I could tell when someone had not been trained and the difference between someone who had and someone who hadn't. I didn't know what the difference was until I had learnt it myself. I then said: 'Ah! ha! that is it.'"
- "Everything I did, felt like the thing that she had described and I knew it sounded right and of course she reinforced it by saying: 'great', and then I knew. I felt a bit of a sense of achievement. That is the one thing out of my eighteen months of lessons that I remember the most, was learning how to do that."
- "It felt comfortable where as before I knew - I didn't know that I didn't know that I couldn't do something - that I couldn't do something that other people could do. After the break it felt right."

RESEARCHER'S OBSERVATIONS AND COMMENTS

Tina's experience occurred twelve years ago which is one of the reasons for her to temporarily forget detail. However, with time and subsequent conversations, she remembered more. For example, she remembered things like watching the hands of her teacher on the piano keys for the next note. The position of the teacher's hand on the piano key board gave Tina a cue to expect a higher note. The cue apparently coaxed her into preparing to lift her voice. This one single condition could have been the catalyst for Tina to begin singing in the top register. Such important detail came as a result of augmenting her interview with follow up discussions.

On suggesting that the skill was more concerned with mental process than physical, at first she disagreed. However, through her talking it through, with me the listener, she came to the conclusion that it was a mental decision. The physical was more of an involuntary process or reflex that caused the muscles in her throat to react forming the sound referred to as the higher register.

There was a period of conditioning in Tina's experience. Tina built a bridge to the breakthrough made up of the knowledge of music, knowing of the phenomenon, and progressively acquiring appropriate skills. However, this conditioning brought Tina to a point of oblivion. There was no more to learn. She had to launch out to reach the freedom of that essential higher register. Therefore, there may be some significance in Tina's learning modality versus the teaching methods that prevented her from experiencing the breakthrough immediately she reached that point of oblivion and had

no where intellectually to go, but, project her voice. It is reasonable to suggest that Tina had all the information and skill for some time prior to the breakthrough. Although Tina was motivated and had repeated opportunities to try, she did not launch out and sing in top register until her breakthrough in learning. Tina's learning mode was such that she focused on the more disciplined tangible elements of music and singing without a thought for any reckless abandonment to 'let it all out'. In addition, something with the teaching method was missing that could have coaxed or even provoked Tina into launching out sooner. Maybe she could have been more aggressive.

Tina's experience was difficult to describe because, not experiencing such a phenomenon, I was unable to relate to such an innate skill. I approached two music professional people to help me describe the processes peculiar to voice production. One professional was a voice and music teacher and the other was a singer in her own right and an educator. Conveniently, they were husband and wife; John Durrand B.Mus (Melb.), F.T.C.L., T.S.T.C. and Norma J. Durrand B.Ed(Arts), T.P.T.C., from Hervey Bay Queensland. I acknowledge their help with thanks.

Warren

PREAMBLE

Warren is a white Australian of Dutch descent and between 35 and 40 years of age. He describes his situation as having had a literacy problem. Through out his schooling and then for most of his working career he has experienced problems reading and writing. He generally evaded his problems until, in 1990, he took a positive step to learn to read and write. He sought help from his wife and literacy teachers - firstly at Skill share (a private provider of educational programs) and finally at TAFE (Technical and Further Education). While at TAFE, Warren experienced a breakthrough in learning to write which has now enabled him to communicate with words where before he used cryptic notes (hieroglyphics). In addition to being able to write, he learnt to read more fluently and understand what he is reading.

LEARNING BREAKTHROUGH EXPERIENCE

The learning described by Warren was seen to be verbal skills. His breakthrough was learning to communicate using written language.

COMMENTS AND CHRONOLOGICAL ORDER

The context in which Warren experienced the phenomenon was:

1 **an inhibition** of fears from the past restricted his desire to learn to read and write.

- "In third grade class I had nuns as teachers...they had this way of teaching that if you had more than three words spelled incorrectly they would cane you. One cane for every word spelled wrong. I couldn't pronounce the words let alone say or spell them. Well every Friday I lined up for seventeen cuts of the cane. I think I just took a hate to it. Truth be known, that is what happened and every time someone would ask me to spell something I would shudder and crawl into a corner."
- "I would overcome my problem by having it written out before hand i.e., a cheque written out in the wallet or something that would show me how to write out numbers."
- "I knew that (reading and writing) was a barrier, but whether I really knew that it was a barrier as far as learning was concerned, I don't think that I did at the time. I accepted that there wasn't any other way of doing it. I never saw it as being a means of learning. I still don't think that it is a means of learning (as in skill to learn), but it helps a lot. You can find a lot more in books than you can get people to talk about."

To a point, I could see that with the skills of reading and writing I could get knowledge.

- "[I didn't seek help earlier because of] shame I guess. Embarrassed about the fact that I couldn't make it with other people and over the years they treated me like I was less intelligent. I never considered myself as an unintelligent person. I'm an artist, travelled around quite a bit, and have done a lot of things. I've done just about every trade you can think of. Reading and writing was just one of those barriers. Something that I couldn't get together."
- "[Before the breakthrough I was] Nervous and a little bit strange about being there, wondering if I would ever get it. I suppose I was expecting miracles."

2 a cognitive disability that prevented him from performing in society as other people who can read and write.

- "I think that I had problems with writing in Holland as well. There was something there that didn't gel.

For years it went on and finally I ended up admitting it to people as opposed to hiding it all the time. I would overcome my problem by having it written out before hand i.e., a cheque written out in the wallet or something that would show me how to write out numbers."

- "It was always a bit hard to get on with work. [My literacy problem] was a barrier. Every time I started a job with an employer and I could progress to a more responsible position (to the point of becoming a salesman, dealer, or someone who writes out quotes, etc) it was just impossible for me. I've always been held back to step past where my skills would allow."

3 social isolation. He was relegated to low social status because of an inability to communicate like other people. Warren was conscious of the situation adding to his frustration.

- "[I wanted knowledge] furthering my education and the fact that I kept running into barriers. I'd get to a point where I could go no further. The written world takes it's place and if you're not there you can't be a part of it. I like to know things.

I was getting knowledge in my own way all my life, but there are too many barriers with doing it that way. There is just so much in books that you miss out on."

4 a formal literacy class where he worked at his own pace and where he was tutored on a one-to-one basis. There were class group exercises providing the opportunity for Warren to face his disabilities along with other students.

- "In the middle of 1991 I went into Social Security and said: 'I can't read or write and is there anything that you could advise me to do?' They sent me to Skill Share and that is where I met Sylvia. She said that I was really wasting my time at Skill Share i.e., one hour here and one hour there and suggested that I approach the college to get you a tutor - which I did.
- In 1992 I signed up right from the word go at the beginning of the year. I joined the literacy classes. 'New Start Literacy' came up and I jumped for that because it gave me the chance to do it full time.

I began at Skill Share then at the college with a tutor. You know one-on-one."

- "It was at my own pace. In the full class that I went through, we had a certain amount of work to get through, of course, but basically the whole thing was at my own speed."

Warren experienced the phenomenon as:

1 a change in the way he expresses himself.

- "...of course me and my cryptic timber lists, drawings, etc meant that I had to order and do every thing because there was nobody who could understand it.

It started quite a way back in the beginning of the year when they got me to actually write stories."

- "It didn't really stick until they started to get me to create my own writing opposed to copying down things. They would say: 'Here is a topic, start writing about it.' That is when it really came together. Because all of a sudden I could play with my own mind. I started writing and it felt good just to see things actually going on paper. At first it was always trying to use the smallest possible words, but that quickly changed and I began to use bigger words and the freedom started to come.

For me it was exciting. All of a sudden somebody lifted something from me. It was a whole new way of expressing myself."

- "I started writing and it felt good just to see things actually going on paper."
- "Now I work with reading and writing. I'm writing reports which is something that I would never have taken on before. Like you said you can pick up knowledge from all over the place and use all sorts of methods to do so, and I have, but reading opens up a new frontier."
- "In thirty eight years I didn't have a hope of writing. You know before the 'the' was 'de' and 'to' was always 'to' no matter which 'to' it was. Now I have this knowledge."

2 a release of intellect. Warren developed rules for writing which in turn helped him to read for more sustained periods and write prolifically.

- "I now write. I write stories and reports. I'm in there and doing it."
- "I've always been able to comprehend what little I could read and anything that I heard. I suppose I would say that I've had good comprehension all along, but it was being able to read for a sustained period i.e., longer than a couple of paragraphs.
- "I found usage of better words since I've been able to read properly. That is something that really came with it. The more I read the better flow of words. A bigger vocabulary, but more importantly I now have a better use of words. I used to use big words, but they weren't right."
- "I've always had heaps of books around me, art books mainly. You know, you look at the painting and you read the size and the name and that's it. Now I read the life stories of them. It makes a big difference opposed to asking other people and them giving their version of the story, I can actually read it for myself."

Now I work with reading and writing. I'm writing reports which is something that I would never have taken on before."

3 a release of dormant skills to write.

- "I started writing and it felt good just to see things actually going on paper."
- "It didn't really stick until they started to get me to create my own writing opposed to copying down things. They would say: 'Here is a topic, start writing about it.' That is when it really came together. Because all of a sudden I could play with my own mind. I started writing and it felt good just to see things actually going on paper. At first it was always trying to use the

smallest possible words, but that quickly changed and I began to use bigger words and the freedom started to come.

For me it was exciting. All of a sudden somebody lifted something from me. It was a whole new way of expressing myself.

What is seen as contributing to the phenomenon is:

1 acting to overcome his fear of people by admitting to his handicap. Warren began the process of overcoming his disability.

- "For years it went on and finally I ended up admitting it to people as opposed to hiding it all the time. I would overcome my problem by having it written out before hand i.e., a cheque written out in the wallet or something that would show me how to write out numbers."

2 Warren taking the initiative to create the situation in which to overcome his cognitive disability. Although he was anxious, he made the decision to seek help.

- "For years it went on and finally I ended up admitting it to people as opposed to hiding it all the time. My biggest breakthrough was the fact that I no longer denied that I was illiterate. This caused the pressure to come off."
- "I suppose that it started back in 1990 when I decided that I was going to do something about my literacy problem. In 1990 I decided to learn literacy."
- "My biggest breakthrough was the fact that I no longer denied that I was illiterate. This caused the pressure to come off. People didn't expect me to write things any more. If I do a quote, I'd have to say to them: 'Give me a timber list.' (of course me and my cryptic timber lists, drawings, etc meant that I had to order and do every thing because there was nobody who could understand it)."
- "I had already admitted to my difficulties before that. I did it off my own bat."
- "In the middle of 1991 I went into Social Security and said: 'I can't read or write and is there anything that you could advise me to do?'. In 1992 I signed up right from the word go at the beginning of the year. I joined the literacy classes. 'New Start Literacy' came up and I jumped for that because it gave me the chance to do it full time."

3 taking an opportunity provided by his wife's urging.

- "In 1990 I decided to learn literacy. My wife was behind me all the way. She would say things like: 'Go for it!'. She started to teach me."

4 determination. Warren made up his mind to set in motion the enterprise of overcoming his disability. His 'fire in the belly' was; as he put it: "tired of being stopped". The expectation of reading to gain knowledge and writing for expression motivated Warren.

- "I suppose that it started back in 1990 when I decided that I was going to do something about my literacy problem. In 1990 I decided to learn literacy."
- "I was pretty determined. I don't like starting something and not finish it. That has always been my attitude. I've got a few trades behind me that I've started and finished, but art is my main field."
- "[I was] tired of being stopped. That was the big one, apart from getting Ross River Fever."

- "It was always a bit hard to get on with work. [My literacy problem] was a barrier. Every time I started a job with an employer and I could progress to a more responsible position (to the point of becoming a salesman, dealer, or someone who writes out quotes, etc) it was just impossible for me. I've always been held back to step past where my skills would allow."
- "I'm an artist, travelled around quite bit, and have done a lot of things. I've done just about every trade you can think of. Reading and writing was just one of those barriers. Something that I couldn't get together."

5 the challenge of knowing that it could be done gave Warren hope and a reason to be optimistic.

- "It was a relief to know that it could be done and that it wasn't out of my reach. I thought that I would never be able to write. I knew that I could read within limitations, but I never thought that I would write."
- "There was a lot of push from the people who were teaching me. For me it was exciting."

6 encouragement from tutors. Warren developed a sense of gratitude and trust. There was a sense of obligation that developed into a dependence from a close student/tutor relationship. This relationship contributing to a break down of a previous inhibiting independent nature that prevented him from seeking help.

- "There was a lot of push from the people who were teaching me."
- "My wife was behind me all the way. She would say things like: 'Go for it.'. She started to teach me. Lots of people would try to help, but, my wife had a different approach. She would teach similar to a class.

She was encouraging. If you wrote down a word and you had one letter wrong she would say: 'Yeah! but you've got five of them right.'. That was really encouraging.

I found that that is the way that teach at the college. Instead of being negative by saying: 'No you idiot you spelt it wrong again', it made me think that: 'Oh! yeah well that's true I've only got to learn that one letter as opposed to learning the whole word.'. That was really positive."

- "...Sylvia had a hell-of-a-lot-of want-to-teach or draw that something out of me that made me more interested. [She would always treat me] like I was really clever, much brighter than I thought I was. Sylvia was always positive. She always fed me with positive thoughts which is incredibly encouraging."
- "It didn't really stick until they started to get me to create my own writing opposed to copying down things. They would say: 'Here is a topic, start writing about it.'. There was a lot of push from the people who were teaching me.

For me it was exciting. All of a sudden somebody lifted something from me."

- "I know that ultimately it was me that did it, but, it was through the tutors' and teachers' support and backing that made it happen."
- "Now I have this knowledge. I know that ultimately it was me that did it, but, it was through the tutors' and teachers' support and backing that made it happen. I've recommended to a lot of other people with the same problem that they too should own up and that they can find help through the college literacy program."

7 a motivation from being goal orientated toward gaining knowledge. The goal created a focus.

- "I've always searched for knowledge, but at best I would only extract the barest knowledge to help me at the time..."
- "[I wanted knowledge] furthering my education and the fact that I kept running into barriers. I'd get to a point where I could go no further. The written world takes it's place and if you're not there you can't be a part of it. I like to know things.
- "Warren's personal goal was to get knowledge not to read or write. He said: "Getting the knowledge not for reading or writing. I've always loved books. I've always had heaps of books around me, art books mainly. You know, you look at the painting and you read the size and the name and that's it."
- "Like you said you can pick up knowledge from all over the place and use all sorts of methods to do so, and I have, but reading opens up a new frontier."

8 fun in learning meant that Warren worked enthusiastically free of pressure. This changed the nature of schooling from dread to fun.

- "We played games like scrabble and things like that which made it more fun. We didn't play scrabble the way you would normally play scrabble. We would set up a word and then see how many words that you could get out of it. We weren't competing for scores. We did other things like reading and writing and comprehension type exercises which were good because it made me read quicker and repeat what the story was about."

9 rapport with the tutor. Warren could relate to the tutor because he had already experienced a similar successful tutor relationship. He trusted the tutor providing a basis on which to build a positive disposition.

- "I came to the realisation that I could write before I admitted to others that I had a literacy problem. It sort of happened when my wife would encourage me and work with me - much the same as they do at the college."
- "In 1990 I decided to learn literacy. My wife was behind me all the way. She would say things like: 'Go for it!'. She started to teach me. Lots of people would try to help, but, my wife had a different approach. She would teach similar to a class. I found that that is the way that they teach at the college. Instead of being negative by saying: 'No you idiot you spelt it wrong again.', it made me think that: 'Oh! Yeah well that's true I've only got to learn that one letter as opposed to learning the whole word.'. That was really positive."
- "...when I ran into Sylvia. Prior to Sylvia I was just dabbling without much interest, but, Sylvia had a hell-of-a-lot-of-want-to-teach or draw that something out of me that made me more interested.

[She treated me] always like I was really clever, much brighter than I thought I was. Sylvia was always positive. She always fed me with positive thoughts which is incredibly encouraging."

- "She was encouraging. If you wrote down a word and you had one letter wrong she would say: 'Yeah! but you've got five of them right.'. That was really encouraging.

I found that that is the way that teach at the college. Instead of being negative by saying: 'No you idiot you spelt it wrong again', it made me think that: 'Oh! yeah well that's true I've only got to learn that one letter as opposed to learning the whole word.'. That was really positive."

- "It was through the tutors' and teachers' support and backing that made it happen."

10 one-on-one tutoring that helped build rapport, in turn, enabling Warren to feel at ease with his environment, the tutor and the work.

- "I began at Skill Share then at the college with a tutor. You know one-on-one."
- "It was at my own pace. In the full class that I went through, we had a certain amount of work to get through, of course, but basically the whole thing was at my own speed."

11 a 'therapeutic' context where Warren's disability was treated. Past mistakes were corrected through the rudiments of language establishing the ground work with his skill for using semantics to understand the function of language.

- "I'm not sure, but yeah, I got to a point where I thought that I was booming along and thought that I was doing really well and could say: "Yeah! I'm going to do it." then I just got to this real stand still where nothing seemed to gel. I just kept making the same mistakes over and over. Those funny words with the weird endings and the silent letters. When I could start working those out, it happened. When I could hear those and the difference in the sounds and say: "Yeah! that's it." that would have been the big one."
- "I would say I probably [reached the time when I could say that I can do this] when I mastered those silly words like the "ous" endings and those sorts of things. When they, all of a sudden, started to click into place. When you hear those sort of funny sounds."

12 discernment to perceive his potential to learn and achieve his goal. Warren developed self confidence which resulted in setting him to task.

- "'Oh! yeah well that's true I've only got to learn that one letter as opposed to learning the whole word.'. That was really positive."
- "There was a point in time when Warren could say: 'Hay! I can do this!'"

13 self-concept. Warren believed that he was an intelligent person. He held a positive opinion of himself that gave him an expectation. His self-concept grew as he realised that he possessed a skill to read and write. Self-concept became an essential prerequisite of understanding concepts of written language.

- "[I didn't seek help earlier because of] shame I guess. Embarrassed about the fact that I couldn't make it with other people and over the years they treated me like I was less intelligent. I never considered myself as an unintelligent person. I'm an artist, travelled around quite a bit, and have done a lot of things. I've done just about every trade you can think of. Reading and writing was just one of those barriers. Something that I couldn't get together."
- "It was always a bit hard to get on with work. [My literacy problem] was a barrier. Every time I started a job with an employer and I could progress to a more responsible position (to the point of becoming a salesman, dealer, or someone who writes out quotes, etc) it was just impossible for me. I've always been held back to step past where my skills would allow."
- "I'm an artist, travelled around quite bit, and have done a lot of things. I've done just about every trade you can think of. Reading and writing was just one of those barriers. Something that I couldn't get together."

- "There was a point in time when Warren could say: 'Hay! I can do this.'. He said: "I think it was when I mastered those silly words like the 'ous' endings and those sorts of things. When they, all of a sudden, started to click into place. When you hear those sorts of funny sounds. I'm not sure, but yeah, I got to a point where I thought that I was booming along and thought that I was doing really well and could say: 'Yeah! I'm going to do it...'"

14 **spacing of material** which was manageable for the learner. Spacing helped Warren find his upper limits.

- "I found that that is the way that teach at the college. Instead of being negative by saying: 'No you idiot you spelt it wrong; again', it made me think that: 'Oh! yeah well that's true I've only got to learn that one letter as opposed to learning the whole word.'. That was really positive."
- "It was at my own pace. In the full class that I went through, we had a certain amount of work to get through, of course, but basically the whole thing was at my own speed."

15 **discriminating** difference in word sounds to develop Warren's verbal skills. Pronouncing and visually identifying the difference in words provided an activity that strengthened his verbal use of English.

- "They would put out things in front of you and say: 'how many words can you get out of this and how many words can you get out of that.'. Once I started to get the hang of the different sounds it became easy."
- "I'm not a brilliant speller by no means, but now I've got enough know-how to look the words up in a dictionary where before I had no idea. It was guess work all the way. I can get by now by being able to use the dictionary. That is a big step, to at least get the first few letters right to enable me to use the dictionary."
- "I read out loud most of the time. There was some reading where I read to myself."

16 **a cognitive strategy of distinguishing** words, comprehending words and so to think about words and their use. Warren began to identify words, their meaning, their pronunciation, and the reason for their use. This strategy was important for overriding his inherent Dutch dialect.

- "Like I said, I could already read, but, she (Sylvia) broke it up from reading word for word to reading full sentences i.e., opposed from trying to work out little words and things like that. She got me through by saying: 'Read the whole sentence.' and then if you have a problem with a word come back to it. By reading the whole sentence I found that the word worked itself out. That definitely worked."
- "We did other things like reading and writing and comprehension type exercises which were good because it made me read quicker and repeat what the story was about."
- "I read out loud most of the time. There was some reading where I read to myself. That was when we did the comprehension exercises. I would read it and then write what I had comprehended about what I had read. We wrote it mostly, but there were a few occasions when we told them."
- "I started to find that the smaller words like the 'the', and the 'to', all those silly things fitted into place. They started, all of a sudden, to sink in where in the past they didn't. 'The' was always 'de'. It was due possibly to my Dutch origin and my pronunciation of words had a lot to do with it. Yeah, I'd say that that had heaps to do with it."

17 composure where Warren found that he could practice reading with greater comprehension during the quiet of early morning.

- "When I first wake up I usually do my reading. It's quite. I also really enjoy writing early in the morning.

18 tutor influence by providing meaningful experiences. The tutor used Warren's creative ability. The creative use of language was where Warren realised that he had the ability to write, manifested in the past by the use of hieroglyphics. Expressing himself creatively was the activity which was the forerunner to Warren realising a latent skill to write.

- "They found the way to get through to me by using the creative side of me. I would say that that is the way they broke me in to it."
- "It didn't really stick until they started to get me to create my own writing opposed to copying down things. They would say: 'Here is a topic, start writing about it.'"

19 a manifestation of a latent skill for writing. He just began to write creatively. It was intuitive.

- "It was a relief to know that it could be done and that it wasn't out of my reach. I thought that I would never be able to write. I knew that I could read within limitations, but I never thought that I would write.

I came to the realisation that I could write before I admitted to others that I had a literacy problem. It sort of happened when my wife would encourage me and work with me - much the same as they do at the college."

- "It didn't really stick until they started to get me to create my own writing opposed to copying down things. They would say: 'Here is a topic, start writing about it.' That is when it really came together. Because all of a sudden I could play with my own mind. I started writing and it felt good just to see things actually going on paper. At first it was always trying to use the smallest possible words, but that quickly changed and I began to use bigger words and the freedom started to come.

RESEARCHER'S OBSERVATIONS AND COMMENTS

There were three events which Warren experienced to facilitate his learning i.e.,

- He no longer denied that he was illiterate;
- He decided to do something about his inability to read and write; and
- He joined an adult literacy class.

Warren's new ability to read and write is attributed to a number of factors i.e., his own motivation, learning basic reading and writing skills, doing meaningful activities, being encouraged, and discovering latent skills for reading and writing.

Warren's breakthrough came as a result of applying language skills to something tangible like writing a creative story. The precursor was becoming aware that he had the talent within him to do that.

A factor in the breakthrough was locating that part of Warren that knows and thinks and feels and wishes and chooses and creates - in particular creates. Warren said: "They found the way to get through to me by using the creative side of me. I would say that that is the way they broke me into it".

An assumption should not be drawn on the breakthrough experience being solely responsible for the long term effect on Warren's writing ability. However, what is certain is that his ability to write began with the breakthrough. What can also be established is that the occurrence of breakthrough was a memorable one.

Warren had one final comment. He hopes that his experience will help others who - now unlike himself - have ability, but, find themselves delegated to a life in which their disability dictates. This is seen as a possible change in attitude that he, himself, does not see. He is now more outward in his motives and desires to share his good fortune. Prior to the breakthrough his main concern was his own self-actualisation.

What can be learnt from Warren's breakthrough is that, although, his learning environment was not an aesthetically pleasing place the atmosphere created by the tutors more than compensated. The tutors also displayed a degree of wisdom by presenting the material in a way which suited Warren's natural talents for expressing himself. The whole enterprise provided the environment and the opportunity for him to discover his latent abilities for himself.

I acknowledge the help provided by a colleague and Warren's tutor Sylvia Courtney B Soc. Sc., Dip. Ed, who is employed at the Maryborough College of TAFE as an adult literacy teacher. Sylvia provided her opinion as to the accuracy of my conclusions with particular concern for literacy terms and presidencies.

APPENDIX D

GROUP TRANSCRIPT

GROUP PROCESS

*Saturday 11 September 1993
8.00 am to 10.00 am
Maryborough Open Learning Centre.*

ATTENDANCE:

Gary
Norm
Neil
Tina
Warren
Coral
Jack

APOLOGY:

Melinda

PROCESS

- 8.00 to 8.10 Overview to (a) With a view to relaxing the group, request that each person introduce themselves over coffee;
- (b) provide an update on progress;
- (c) inform participants of what will be expected of them - why they are there;
- (d) provide an explanation of how the group process will contribute to the final study;
- (e) Test the audio equipment and set the rules for recording; and
- (f) Provide an explanation of the process.
- 8.10 to 8.15 Provide a short description of what they learnt as a result of their breakthrough experience.
- 8.15 to 8.17 HAND OUT the three report summaries on breakthrough for verification.

8.17 to 8.20 Assure participants that there are no right or wrong answers. Alterations/additions/subtractions will be made as they deem necessary. (Use OHT.)

NOTE: There are three ways of looking at your breakthrough event. One is "What did you experience?" the second is "What was the situation at the time i.e., what happened?" and thirdly "What learning process did you use to learn and what was it that you learnt?. Hence, the three parts to your breakthrough event.

8.20 to 8.30 In order that each participant is familiar with their report of learning breakthrough, ask them to read their own and verify it as their experience.

8.30 to 9.30 Proceed to read the 'Summary of Findings' with the view to having the participants respond at will.

9.30 to 10.00 Have the participants consider the question:

"What were the special features of your learning breakthrough experience that were different from any other learning experience?."

Provide 3 minutes for them to consider it and 5 minutes to jot their thoughts on the paper provided.

Having done that, ask each participant to read their answer to the group. The time allowed for this is approximately 22 minutes. The purpose for is to record their answers.

SUMMARY OF FINDINGS

This report refers to findings taken from information provided by you during our interviews. The report does not make any conclusions, it is simply referring to the findings from the analysis of your transcripts. The various statements that I intend reading to you in a moment stem from my thoughts as I scanned the analysis.

You will be asked to make comments at the conclusion of each statement. Please make comments at any time (stop me if you wish) and feel free to be critical. No comment that you make will be ignored. Your free flowing thoughts are invaluable so please don't think that your comments are not relevant or not worthwhile.

I've written the findings as short statements or stories providing some insight into the mystery of breakthrough in learning from your perceptions. These are not the only findings. The statements represent features of the breakthrough experience that could prompt your thoughts to help clarify and support the findings.

Incidentally, if you wish to get off the subject of the statement with something that you consider pertinent, do so. We do not have to strictly adhere to the agenda.

1 There is evidence that you were in familiar surroundings when the breakthrough occurred. The atmosphere provided by familiar surroundings seemed to give an air of tranquillity in which to become composed and relaxed.

For some learners, unfamiliar surroundings became familiar as you grew accustomed to the place. It was evident in these cases that familiarity occurred prior to or at the time of the breakthrough.

In a couple of instances, habitual acts like jogging, going over to Mum's place or working in a familiar room created familiar territory.

How important was composure of mind? I would have thought that at least in some instances I would have found stirring circumstances where the mind was pressured and the breakthrough was an extreme burst of energy to compensate. Particularly, when this breakthrough thing is so memorable, but, I didn't. What I found was evidence of composed minds and relaxed people.

OPEN FOR COMMENT

Gary I would say that that was an important part of it, but, with myself there was a drive to really want to know. Sort of a low level strong pressure in the background which was a case of you using an environment to relax into and you feel OK. The problem is still there with the pressure and it is important. It is not as if you come under heavy stress to get it. It's not my experience.

Jack I think that you have to relax in those environments to concentrate while you are actually learning. You don't have to worry about i.e., if it smelt or it's cold in hear. You just get down to the nitty gritty of learning.

Tina My experience was a physical breakthrough and I found that because I was comfortable, it gave me the confidence to keep going and not worry about it- of course I was singing at the time. I was comfortable and comfortable with the teacher. I could explore what I was doing and feel comfortable in that I was not going to make some outburst that sounded stupid. It was important.

Neil Well I found that I was not comfortable. The whole problem with my breakthrough was where I had to get through the barrier of being uncomfortable. As I told you, my breakthrough was during our trip to Sydney and I had met the person before and I wasn't very comfortable and thought: "Well I've got to do this.". I found that I was not comfortable. I become comfortable after a little while, but not initially.

Warren I would say that I was calm. I was not over pressured. It was a relaxed atmosphere. I think that you are fairly right because I did most of my reading in bed of a morning. I would say that it had a lot to do with it. There was nobody there to sort of criticise what I was doing. It was definitely a part of it.

2 You seemed to demonstrate characteristics of stick-ability and taking the initiative by doing something positive toward overcoming your individual problems. I would interpret, from this, that you each displayed courage.

The findings suggest that your breakthrough experience did not come without cost of time and effort. However, the actual occurrence seemed effortless once you got there.

What caused you to press on and not give up?

OPEN FOR COMMENT

Warren Determination.

Coral I would go as far as to say: "Pig headedness."

I had twenty years between school and deciding to come back and do a degree. So there was a very big gap of

being at home with kids, etc and trying, at that time, to come to grips with having to hold that much information in memory was difficult. It was very theoretical stuff - psychology and sociology stuff. I needed to retain masses and masses of information and I just told myself that I was going to do it and that was it. I was 'pig headed'.

Gary There must have been a need for you to want to upgrade and whatever.

Coral Oh, yes I had to achieve for my own personal self-esteem. I knew that I had to do that.

Gary With the problem that I am trying to solve, it is purely a selfish thing. It really wasn't going to do anybody else any good. It was just something that I had to think out for myself. So the force was coming from within.

Coral I was the same. There was something that I knew that I wanted to do and I was determined to keep at it until I could do it.

Gary And when you say cost in time, all the time you are thinking about this sort of thing until the penny drops is also time expended. It shows in my case where I read this sort of information and chase it and see it on television and you look for it all the time. You are looking for trouble, if you want to put it that way, it is not as if you are told to go and solve it. That was not my experience.

Norm I had to come to grips with it, because it related very closely to the type of work that I was involved with. So the pressure was on me in the sense that I had to know what I was talking about to put it into practice. That did not come easily with the first speakers and presenters.

There was a time when it changed. There was a combination of presentation and possibly the input that came from the other members. It wasn't just left to a presenter.

We sat back in the early stages and turned off. When I say 'we', I meant that as a group we turned off because there was a great amount of discussion afterwards. We thought that we were the one's lacking. It wasn't the proven case. It was a case that as a group of professional people we were not given the information and all that happened was

that we became frustrated. That had to be rectified before we could actually get an understanding.

Gary You must have been receptive to the new ideas to take them on board?

Norm We had to be receptive each one of us, for different reasons. It was part and parcel of our employment. We had to get an understanding of it, but, it was negative for the first day or so.

Tina It was a bit different for me because I didn't know what I was trying to learn until after I had learnt it. I knew that when I heard other people sing they sounded effortless when they went up scale. I didn't, I just got louder and louder. I knew that I wasn't doing something that they were doing, but I didn't really know what it was and it wasn't until after I had done it that I knew what it was and say: "Ah, that is what it was.". I suppose because I didn't have this thing that I knew that I had to reach for it. It wasn't as frustrating because it is not like looking over the fence and trying to get something and you can't reach it. I didn't really know what I was trying to do until after I had done it. It was very satisfying after I had done it for the first time, then I was right and I knew from then on.

There was no one pressuring me. It was just myself. I pressure myself enough anyway. I knew that I had to keep plugging along.

Warren With me, it got to the point where I had had enough of not being able to do it. It was self drive, it was something that I admitted to myself and wanted to do, finding someone out there that wouldn't put me down for it and back me up. That was a lot of help for sure.

Gary That's interesting because with all the cases that I have heard, we all had this frustration i.e., you were not getting there and you had to know what it was about and you didn't know what the end result necessarily was.

Jack My drive was just plain out competition. I had to be the best at doing it so I just kept on going. I wanted to really give my mates the shits.

Tina We all obviously have a key element of determination, but, I wonder how people without the same level of

determination get on with adult learning? If they come up to a barrier do they, without that determination, pull back and say: "Blow it I worry about it."

Coral I would say that that is demonstrated by the number of people who start external study and drop out. We started with eight people in my degree, seven have dropped out and I am the only one left in my study group. You've got to have that determination.

Norm Having a purpose.

Warren When I started there was a big group and I finished up being the only one of the people who started when I did.

NOTE: There was generally over talking, but everybody seemed to relate to similar things.

Jack There is also the interest. You know if you started it because you thought that you wanted to do it and then you find out what it was going to entail you tend to weigh it up and often you will drop any further interest and give up.

Norm It ceased to be amazed at TAFE with the prevocational students when they come into TAFE - they are not the top academic students - they have in their own minds been failures quite often up to that point. They come in and they find that they have a purpose and latch onto a particular trade area and then see a purpose in what they are doing and build an interest and often succeed. I think that that is a prime example of interest being a force in education.

Jack But then what kills the other students is that they have an interest in one thing and all these other things are forced on them to make them give up on the interesting things. If they had the chance of concentrating on that one thing i.e., writing, or welding or machining, instead of art, maths and all those other things i.e., life skills, a person gives up on everything.

Warren Actually, those other parts, for me, made it a bit more interesting. Having something else to do instead of just sitting there doing the one thing to learn. Having that bit of a break and if you feed it back it is all sort of related to the thing anyway.

Jack I suppose that it might be that the person really didn't want to do that. He might be blinded by that one subject. You might need more than the one subject to achieve the one subject.

Gary I wonder, looking at the group, if most people seem to reflect on what they are doing. My experience has been that one of the biggest problems is getting people to think about what they are doing and that is just what doesn't happen. We sort of see the problem and then reflect on it and whether that is a necessary ingredient for solving those sorts of things. There are certain people who just simply do as they are told at infinitum and not change it.

Coral From my own experience, people that do as they are told are simple not satisfied. People that put extra reflection into it get much more from their jobs.

Norm It comes down to incentive. You've got to have the incentive. It is either a case of through the pay packet or through personal satisfaction or something in that form that sets up the drive for you to want to do it when you have to do it. Without that incentive you would do it.

3 A model of a person to imitate or learn from was periodically evident in the lead up to the breakthrough. Not that each model was inspirational, but, the model was instrumental in providing information that was pertinent to the situation or the knowledge to be acquired at the time.

Was there someone or something that played a part as a model in your breakthrough experience?

OPEN FOR COMMENT

Neil Mine was a book. A book on personality.

Coral Mine was a book about study methods.

Neil But this book had said: "Look for someone to use as a role model."

Gary There wasn't any in my case. There was no role model involved.

Norm There wasn't really anyone.

Warren No, not really. There were people supporting me, but, no it was only myself that drove through frustration.

I didn't have anyone that I wanted to aspire to. I've done a lot of jobs throughout my life and I've done it for a far while - change over - I only get to a certain point because I got into the actual writing part. I really wanted to be the manager, but, on the other hand I wouldn't have minded understanding what he was doing.

I have done just about every job at some stage for myself or for other people. I sort of take on something, achieve it, and finish it. I've always stopped when it came down to writing about it or to give details about it or even reading up on it. I didn't have to use my own mind, I used to take some short cut.

Tina I did want to aspire to the level of singing and sing in opera like those people. My experience happened thirteen years ago and now I think that I should have joined a light opera company, but, I didn't. I finished up teaching. I did a lot of study that has ended up being useless, particularly when you see what I do now - three kids and I help Neil in the business. At that stage, I just wanted to sound like they did. I wanted to sound like they did even though I didn't know what the difference was. Singing is a sort of thing that once you have the skill you can go as far as you like - come the opportunity. I always had that belief that you had to get an education and something to fall back on. I don't necessarily agree with that now in the same sense.

- 4** Some of you used novel methods for aiding memory. One learner formed visual images, another talked inwardly, and another used order as a means for helping the mind process information. The findings suggest that in each case you were influenced by your own preferred way of thinking or working through problems. The memory aid certainly seemed to assist with memorising material and retrieving material.

What aid did you use?

OPEN FOR COMMENT

Coral Acronyms. The only way that I could do that - if the theory had ten parts - was to make a word out of them.

Neil So did I. I used them (acronyms) right through uni. Did you use funny ones or naughty ones?

Coral I could not write really naughty ones because I had four kids at home and there was a danger of them reading it.

Neil It is association. As long as you could remember the real word.

Coral I'd start writing it and it would come back.

Jack I tried it and variations on that, then I practiced. The variations were different hand grips and the different speed and all that. Trial and error and different ways of doing it were mine and other peoples. I walked around looking at other students working. Everybody has a different way of doing things and you tend to think: "I yeah that's not bac, I'll try that.". I then mixed it all up together and come up with own way of doing it.

Once you get an idea of your own into your head it's much easier to how to do that than remembering to do somebody else's ideas because you can really relate back to your own methods. It is like you saying: "Oh, you do it this way.", then you think: "Why do it that way?", creates trouble with memory. If you do it your own way or you find that another way is better once you do it then you generally remember it. You are bound to do it the way you are most comfortable with.

You understand it the other way to a point. If the teacher has told you to do it a particular way - forcing you - then you do it that way, but, I think it is more encouraging to think in your own way.

I think if you go through life only doing what someone else sees as the way, it is not a very.... You've got to follow a certain path, but you need plenty of leeway to go either way.

Norm Possibly I used the leaders and pointers from the papers themselves. They were one word to give me the leader to carry on. Highlighting single words. If I can latch onto one word I can generally pick up on a theme.

Gary I'm probably the wrong guy to ask about memory. I don't go for acronyms because I would forget them. I tend to have a mind like my daughter's bedroom - stuff everywhere. I sort of select what I want from material and new information comes in. I don't sort of go into any system or organisational pattern. I think that I just follow my nose. If an area would lead to somewhere else well so be it, that sort of guides me. There is no sort of master

plan of setting things out. I am a most disorganised person and memory is the same sort of thing.

It is possibly because I don't rate memory as all that important. I sort of think, well if you want to know something know where to go to look it up rather than know what it per se. I tend to think that now with the flood of information you can't get on top of it. So really, the time that you spend learning, is probably more profitably spent learning to learn quickly.

Coral It's probably knowing what your own base line pressure is. For me I had to have this information and I had to pass exams, etc.

Jack I remember one teacher at TAFE telling me that he couldn't understand why you needed the knowledge for an exam when you'll have the book with you for the rest of your life.

Tina I can remember when I was studying, I had to be really ordered. We had a sociology exam and they gave you seven essay topics from which they would choose five and you would have to write about two. So we always calculated how many you had to write in order to cover all the topics. So I wrote all five essays before the exam. They said that we could only take one piece of paper into the room. I took one piece with all five essays written by dividing the lines up. Then in the exam, I just sat and copied them out. We were allowed to do it.

Gary If you think about it, in the end, you do tend to do things your own way. You've taken all things into consideration as Jack pointed out. You probably then arrange it the way you wanted it.

Tina I also found that I learnt what they had told me to learn and got high marks. I was the perfect student, but, I wasn't necessarily the best teacher when I got out of uni. It was not until after I had finished all the study and the pressure gone that I reflected on it all and by actually doing it, I became a good teacher. You can only learn so much of some else's way.

Norm The best scholar doesn't make the best teacher.

Jack Skills of life really make teachers.

- Coral You still need the knowledge from others in order to get you through.
- Tina You learn by doing. That is why with kids learning maths on paper, anyone can say: "Nine plus one is ten.", but, you don't know what it means if you haven't physically bundled them together. You have a picture if you physically become involved then it is in your mind and you can relate back to that picture all the times. You form that picture by doing it yourself.
- Warren With me it was just starting to write and putting it into meaningful things like writing stories as opposed to writing sentences. To make it work and see something in front of me. I don't really know what I had used to learn. Maybe just repetition, I think. Like repeat what you used and say in sounds. However, I can't really pin point how I remembered to do any one thing.
- Norm Could I suggest that, as Jack mentioned before, with the welding isn't it summing up of a lot of our experiences - practice to build on that knowledge. I think with welding, that is what Jack was demonstrating. You adapt and adopt these things to suit your own needs.
- Coral From Jack's perspective of welding, being a physical thing your fine and gross motor skills are going to be different from one person to another, particularly in the way they feel the process coming through.
- Jack Even with learning English, everyone has learnt how to write and speak in English and if you want to go further and write in Japanese or German you use English as a base and adapt to talk in an accent.
- Gary It is almost as if every one is not just interested in the job, but, getting mastery over the whole thing. People are not just prepared to do the nine to five thing, but get on top of it and improve and take it further and adapt it to themselves and.
- Tina When we were talking about being relaxed and confident, I was thinking before about what Ian is doing with his studies. I could not do what you are doing because I have to know...like even though with the singing I may not have known what I was trying to achieve, but I, at least knew what it sounded like. I have to know a framework of where I'm going. With the study that you are doing you

are kind of going into it not knowing what you're going to find and what people are going to say. I would find that mind blowing. I've got to feel confident in what I am doing even before I will attempt it.

I remember when I was in grade 11 first chemistry prac. that I had to do. I remember that I had trouble with the very first day and my brother just happened to make the remark that: "You should have picked something as stupid.". I didn't sleep for about four nights because I thought that well that's it I can't do it. Once I got over that boundary I was OK, but, I was just thinking of how I would not feel competent doing what Ian is doing because I wouldn't know where I was heading.

Neil He who dares wins.

Coral It seemed that everybody here is at a time in life when they can go for it because their basic underlying needs have been met. I mean, if you are out in the broader community, there are a lot of people whose basic needs for security and all the rest of it haven't been met. They wouldn't be able to relax and do what we are doing and go for that higher level.

Gary Self-fulfilment.

5 Each learner faced negative situations that caused concern and anxiety. A climate of confusion and fear seemed to hinder you in the early stages of your learning endeavour. There were no strong feelings of anger or hate or aggression or resentment which influenced your actions to make you determined. However, you were determined being generated, evidently, through persistence. In one case the learner used competition with fellow peers. You each seemed to be quietly confident. The breakthrough, of course, vindicated that confidence.

What made you confident, when things were obviously not going too well?

or

Have I missed something and you weren't confident. You were something else.?

OPEN FOR COMMENT

Neil I wasn't confident to start with. I kept doing it. As I kept doing it, confidence grew. When I started to talk to people, particularly in the surgery, everyone responded positively. Then I realised that I should have been doing this before.

If I was rubbished, it would have made me more determined.

You can be determined and not be confident.

Tina You've got to be confident in what you are doing. For example, if somebody rubbishes me for something or puts me down and I know that I can do it...like I'm currently into cake decorating and if someone said that that was terrible, that would make me more determined. However, with a thing like Amway prospecting people I was confident and if someone put me down with that that would be it. I would give up. I think that you must either have that underlying determination and be sure that that is what you want to do then you treat what people say as a challenge to overcome. If you are not confident with what you are doing in the first place then that is your excuse to give up.

Jack If you are confident enough that you know you're good enough then if any one rubbishes you you brush it aside.

Tina I got to that stage with Amway because that is why we quit.

Norm Great achievers have had that determination as well as that confidence and competence. You've got to have the drive to keep going.

Tina Competition comes into it as a big drive with me.

Norm Competition is in our every day work. Competition is there whether we recognise it or not. We are continually trying to be seen at least as being better than the people next to us.

Jack People that aren't really competitive seem to fall apart.

Gary My experience of the economic rationalist thing is totally opposite of competition. I reject economic rationalism because it is competitive based and my conclusion is that it can only mean chaos and carnage at the end. Over the last fifteen years we've been watching it happening that way so I am sort of dead against any ideas of a competitively based society getting the performance of the individual up. I can see the social problems coming from it - economic management. I've been driven because it is a serious concern not because it has anything to do with

competing with people and if it was I would be destroying my own philosophy.

So mine is not a competition unless it is within myself that I must understand this because I see it being so important. That is where the real drive with me is. The fact that everyone on the planet doesn't agree with me frustrates and upsets me, but, it has nothing to do with confidence because I can't believe in something like two and two makes five. It doesn't matter if I'm not that confident. I just can not believe that. The time I spend is done willingly thinking about it.

Norm It must be difficult for you, then, being a teacher because the whole school system is competitively based.

Coral Take the public service. It is becoming more and more competitively based. Take for instance the performance appraisal scheme. If you don't live up to your appraisal the other block will get your job.

Gary A service which should be based on cooperation, which is the public service system, tends to end up where you compete with your mates. If you come up with a good idea, the last thing that you are going to do is talk about it because your mates are going to pinch it. It's hopeless.

In all of this, I am trying to chase what is the truth within an enormous maze and just as you (Tina) couldn't come to the context of your higher register until you got there or what ever, I don't know what it is like until I actually get there.

I like order. When I say that I am an untidy person I would say that that is so. but, I still like to think that things are pigeon holed and they all have a place.

I guess that you go through a certain amount of personal anxiety over what things should be.

- 6** The acquired skill learnt as a result of your breakthrough was permanent, indicating that we are dealing with the storage of information within long term memory. The process that causes information to be stored in such a way as to allow you to recall and use that information some time in the distant future evidently occurred in the moment of your breakthrough experience. That is why I refer to the occurrence as a breakthrough in learning because you did learn - by your own admission there has been a lasting change.

To help describe the findings in terms of this phenomenon allow me to explain briefly what happens to information. From what I understand, there are three levels or channels, if you like, that information follows to reach the storage part of the brain and become long term remembered.

Firstly, are the receptors. They are the senses that receive the information such as hearing, sight, taste, touch and smell. Information is processed through the receptors into short term memory through patterns of stimulations. This is a very brief process.

Secondly, is short term memory. Information reaches short term memory via the receptors through a process called selective perception. In other words, depending on the person, certain features are collected while others are ignored. Information remains in short term memory for seconds only.

Thirdly, is long term memory. Information reaches the storage part of the brain with varying degrees of emphasis and become stored to be remembered short term or long term. Storage is achieved in various ways, but, basically by the cognitive process of attending. To give an example of attending look at the senses. You will find that what happens is that through the hearing you take time to pay attention and listen, through the sight you take time to see and view, through taste you act by tasting, through touch you take the time to feel, and with smell you take a good sniff. This could provide information for the short or long term memory.

Remembering in the long term depends on certain condition being met. One condition for long term memory is comprehension of incoming information at time of memorising, reinforcement of information at time of memorising is another and so on. Your breakthrough experience was of the nature of long term memory. The event was one or more of these conditions that were acted out at a moment in time.

Would you share your view of what happened to you to cause the information to stay in long term memory?

OPEN FOR COMMENT

Coral Just the realisation that I could store that much information simply by breaking it down and generalised it. I didn't remember a chapter in a text book, but, I found that if I broke it down to ten key works with an acronym down the side, I could remember the chapter because I had pre-read the material and understood it. Then, all I needed was those key words to retain that information.

I had an interest in it to be able to comprehend. It would be hopeless having the ten key words which you didn't back up with an understanding of the material and couldn't relate it back to the key word.

Gary Mine was like that too. It is almost as if the information your sieving all the time...like the size of the mesh that you

are using to sieve is dependant very much upon your interest. The big fear that you have is that what you are sieving; is that really relevant info? It is relevant to you as you see it and it interests you and it drives you, but, are you missing the main event. That is a possibility. When you find yourself being so far removed from the main stream incentives then you've got to ask why did you arrive over such vastly different spectrums. Then have you been using the wrong sieve all the time and is there something that you are obviously missing.

Coral I can relate to that because if you are doing an assignment you get the question that you have to answer then you send it off and it comes back and you think: "Oh, what a right winged lecturer he or she is.". They come from a totally different perspective from what you are because of the difference between your life's experience and his.

Tina You would select what you thought was the important part and you could tell from the exam papers that they were putting emphasis on other things. The things that they obviously thought were important.

Gary School teachers are telling you all the time to think for yourself and what happens, you need your acronyms and whatever, because you've got to come up with what they want. If you come up with a bit of free thinking and possibly your best ever contribution it only gets a may-be pass.

Warren Sometimes you have to conform with society to get into a position to let your ideas and views be heard. You can make a good point, but, people will pass by and not listen until you conform.

Gary The problem with conforming is that eventually you do conform to such an extent that you totally lose what and who you are and I think that is what politics is all about.

Warren I can agree with that, but, to a certain point you have to conform just till you get there then once there you have the right and that is when people will listen. Get into the position where people will say: "That guy is having a speech here. He's such and such so you stop and listen."

Jack You're sort of bluffing everybody. Like the politician, telling them what they want to here until you are in power then give the real story and cut loose.

- Tina Once I had learnt the technique, I don't have to dedicate myself to remembering. Mine is more like an automatic response. It is more of a knee jerk or reflex. Once I had learnt it, it became a part of me. I had to learn that in the first place by doing it.
- Coral The actual process for me was to learn the study system, but now it is automatic. I automatically do it now with the lectures that I get. It changes from learning it to being a process and part of me and the way I operate.
- Neil I was thinking of the acronyms that I used at uni. I can't remember most of them so they must have been stored somewhere for a certain amount of time. They have been taped over. Other things that have happened and taken precedence.
- Gary Have they been taped over so that now they are gone from a lower level to a higher level where before it was just drifting knowledge and now it is synthesised.
- Neil It is operationalised.
- Gary ...you've now got it into context and you don't necessarily need to know the minor intricacies.
- Coral The other thing that I have found, though, is like you do remember it for the semester, but, you lose some of it along the way. I am in my sixth year now. I come across a unit that needs to recall some of the things that I had learnt earlier. I quite often surprise myself and think: "Oh, yeah I do remember that.", even though I haven't been consciously thinking about it for three or four years. It had come back when I had used it in that particular area.
- Tina That is what they say about memory. You really do have it in there all you have to do is find the key to unlock it.
- Neil When you've finished your course, are you going to get into a different job?
- Coral No, I'm in the job row.
- Neil You see five years was my start which consisted of just theory and then it changed to all practical. The theory was in there (memory) and you are using it while you are

working, but as Gary said it had changed. It was at a higher level.

Coral It is like that for me because when I'm working on submissions and things I quite often have to draw on my theoretical knowledge to be able to write the reasons why we should be funded.

Neil OK well that for me has become automatic. I know that when I pick up the drill I do it.

Jack Second nature.

Coral Yeah, but I'm writing and you are doing the practical.

Neil Writing is still practical. It is still coming from there and coming out there.

Coral ...but, I still have to recall information for me to write.

Gary In Neil's case I wonder what would happen if we worked the other way. If we worked back and we said: "What do you do now with all your skills?". If you wanted to theorise wouldn't you go back to the old acronyms and write it down step by step.

Neil I suppose I would.

Coral You have to have your key components there, otherwise the person who came along to do your job if they didn't do dentistry before then.

Jack Would you go back and do it per the book or would you go by your way?

Neil A bit of both. A teacher just can not teach you everything.

I remember a vet student once saying...their course was a fairly similar five year course...that I had it made because when I get out I've seen everything in that five years and I can just spit it out. That was a load of crap. He reckoned that when he got out there there was no way that he would come across everything in a course that he would do when he was out.

There is no way anyone is going to face everything in a course that will be faced when they begin working.

NOTE: Coral left at this point. She had another commitment to go to. It was 9.40.

7 The most commonly occurring processes were not generally experienced by all participants. However, processes such as reflection where the learner pondered on issues and practice to trial skills were strongly represented. Clarifying issues to aid comprehension was also present.

Senses used most in the lead up to the breakthrough were sight, hearing and touch. Intuitive or sixth sense was possibly most prevalent across all learners, but, sixth sense could be viewed not as a sense, but, as an explanation of the learner accessing prior knowledge.

It was interesting to learn that taste and smell were not mentioned. If they played a role it was not made obvious. May be there was no sensation of taste or smell even though they had played a secret inward role.

Would you comment?

OPEN FOR COMMENT

Jack If you had spoken to a cook my be.

Norm Oh, no take for example the fumes coming off your electrode, they will certainly tell you if something is wrong. It is the same as the tone of voice i.e., voice raised and the ears pick up those changes the same as the eyes that pick up varying facial expressions.

Neil You can tell when people are getting uneasy. You seem to tell by intuition. I don't know how you tell. May-be it is a sixth sense. It all goes on past experience because you know when someone has been irate at you and you learnt to tell the signs. You put them on edge. You just know. The book describes all that and coupled with past experience - hind sight - you can tell and read the non-verbal reactions of people. Every thing you do is shadowed by your past experiences.

8 Each learner accessed memory in their own particular way. At the time of the breakthrough there seemed to be a need to disengage from external influences. From the findings it seems that external influences were managed simply by removing the obstacle. However, the internal interferences were much more evasive. They could not be removed simply, if at all. The internal interferences were either an inner physiological problem, or an inner neurological problem or an inner psychological problem. Being intelligent humans you evidently worked out ways of putting the inner obstacle to one side while you went and had a breakthrough.

It is evident in the transcripts that some of you used a sense like touch to provide the tactile stimulus which overrode the interference. Another learner used order of material on which to focus concentration and yet another learner used physical activity. I refer to such phenomenon as accessing your thinking processes. Without access you would have progressed no where.

Do you have a preference for accessing your minds activities?

OPEN FOR COMMENT

Gary I talk to myself.

Warren I'm similar to that. I talk to myself. I send messages to myself. I don't stand there and talk out loud, but, that is something that I do often - quietly.

Tina I do the same thing.

Gary I think that it is a sort of deep concentration because if you are by yourself and you are prepared to talk to yourself, you've actually lost the awareness of someone walking in on you. It is only when they slap you back out of it that you became aware that your standing on the kitchen table. It's damned embarrassing.

NOTE A few jokes and laughter at this point regenerated the group.

Jack It's about being at ease with yourself. Going back to the first question.

Norm I think that this is why the smoko vanishes at those sorts of times. People will go and make a cup of tea. They each have their own ways of doing work.

Gary Yeah, I can see real implications for people who take drugs. There are different ways of getting away. Maybe we don't leave enough space in our society for people to sit down and get away and....

Warren That is one of the biggest problems in Australia. We have these stress problems. We also tend to absorb everybody else's opinions and not be allowed to work it out for ourselves. My mind shuts off. In fact I wake up in the morning remembering every thing that I thought about during the night.

If I go to bed with a major problem, I'll bet my boots that by morning I've got the answer. Sometimes I'll jump up in the middle of the night and go and do it. I'll sometimes

wake up in the middle of a dream and get up and do it - a painting or carving, or what-ever.

There are strange ways of working things out.

Tina I must unconsciously do that to. I'll be in the middle of doing something totally different and then something will come to you. There must be something active in the background of your mind figuring it out while you are doing something else.

Norm I solve my problems at three o'clock in the morning. If I go to bed with any problems on my mind I can almost set the clock by my mind.

Tina Do you go to sleep first?

Norm Oh, yes I would have had five hours sleep before hand. I'll wake up do an hour of mental work and then dose off.

Warren Yeah, I do the same.

9 Please consider this question, reflect for a moment and give me your thoughts.

"What were the special features of your learning breakthrough experience that were different from any other learning experience?."

Gary I really don't know.

Warren I don't know.

Norm The wording of your question doesn't seem to be relevant. They are all breakthroughs. Every learning experience can be classed as a breakthrough. To pull one out and say that it is different or better than another seems wrong.

Tina Ian, do you think that this one should be different?

Ian I'm wondering.

Neil I found it was different. All my other learning experiences have been structured. After university it was me who had to do it all and there has been a lot more learning experiences. They have all been different, not pressurised. You know, I don't have to go and put it down on paper at a three hour exam with some person walking up and down the aisle.

To me it is completely different. It is coming from within me and it is not for outside scrutiny. I make the decision if it is right or not.

Gary I've got some ideas written here.

Firstly, I thought that it was the speed at which the ideas came at that point. It was almost instant assimilation of so much knowledge, where in other learning you've got it down structured. It's pretty boring and you've been led by the nose. This one here is a sort of free-for-all.

Secondly, I thought that there was a heightened awareness and exhilaration. There was also enormous release. I got a good buss out of it.

Thirdly, I felt that it was obligation free. It wasn't a system's imperative where I had to do this.

Fourth, I felt that it was personalised because it was copyright free.

It is something that other people just have not connected together and it is really a time at which you feel that you've come up with a special idea. It is probably a crack-pot idea, but, it's my crack-pot idea.

It is like the professor or book that is giving you stuff that is not yours. I guess that it is a genuine thrill of the first time of relating things in a way that as far as you know it has been done before. I've come to breakthroughs before where later you suddenly read that someone has written it and you think: "Oh, no it wasn't me."

If you look at it in historical contexts, quite often in science etc different countries can be at the same threshold of breakthroughs. We Brits and Americans claim the high ground on these sorts of things, but, other countries were ahead twenty years. It was just that they were not the same colour.

Tina I wonder if we didn't pluck out this particular experience because it was an important one for us.

Gary Once you've experienced it once, it is like a kick that you get to keep you in this mode of thinking. You know I think that some people get to that stage and so they keep learning as a bitter pill.

Neil That is how I felt after my breakthrough (the kick to keep going). Now, after, I love reading. Before, I absolutely hated reading. It is a big change for me. I now miss reading books.

Tina Is this experience really any different to any other way of learning because it was an individual thing and we didn't have any pressure. It has made it perhaps a more enjoyable breakthrough than others that we've had in the past. I mean that we must have had a breakthrough when we first learnt two twos are four. Although, it wasn't as important to us.

Jack With schooling you had to learn.

Gary Have you all been at meetings where you're frustrated by this new collaborative technique. They have this sort of problem set out in front of them at meetings and so on and sort of fifteen minutes after the start, its probable egotistical but, you say well shouldn't we do it like this and this and this and everybody says raspberry. Two o'clock that afternoon, what's the great new idea that's put forward?? and you feel cheated. Why you feel cheated is because the penny suddenly drops with somebody else and their claiming it as their idea. I think that is why, when you are on your own, you are free to possess it yourself.

Neil The Walt Disney story is an inspiration to people who tinker on the edge of giving up. He went to 500 banks to get finance for Disney land. The determination was there to keep going. If he had given up at the 499th bank we would have had Disney world.

Gary And we would had missed it.

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