# LEARNING POTENTIAL ASSESSMENT:

AN INVESTIGATION TO THE CORRELATION TO THE LEARNING POTENTIAL AND HOW THE SUPERVISORS RATE THE EMPLOYEES FOR THE DEVELOPMENT INDICATORS AT DENNY MUSHROOMS – SHONGWENI.

Submitted in partial fulfilment of the requirements for the degree in of Master of Commerce in the Faculty of Commerce, University of Durban Westville.

Mduduzi Henley Sithole 2003

ABSTRACT

The purpose of the study is to assess whether a psychological test of learning potential can predict supervisory rating of different components of learning potential for the low level worker. This exercise would be done ascertain the relationship between the learning potential by using the TRAM-2 battery (a learning potential assessment instrument) and supervisory rating of the sample of workers. A sample of 60 employees with levels of education ranging form grade 8 to 12 inclusive was used. It is hoped that the findings would predict or identify employees with potential for development which would then lead to planning how that potential is developed to empower the employees to improve their performance and self actualise their objectives. This would enhance the realisation of aims and objective of skills development and employment equity plan of the company. The findings and their implications and suggestions would be discussed in this study.

# DECLARATION

I hereby declare that this dissertation is my own work. It is being submitted in partial fulfilment of the requirements for the degree of Master of Commerce (Human Resources Management) in the University of Durban Westville. Opinions expressed in this work, or conclusions arrived at and suggestions, are those of the author and are not to be attributed to those persons or organisations acknowledged. All the resources that I have made use of or quoted have been acknowledged by means of complete reference.

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MH Sithole

Chapter 1



Chapter 2

Chapter 3



Chapter 4

Chapter 5

APPENDICES

# CHAPTER 1

## 1.1 INTRODUCTION

In South Africa education for the majority of employees was, and to a small degree is still, not easily acquired. Many companies are not only faced with poorly educated employees but the majority of the employees are illiterate. The need for companies to be globally competitive requires employees whose level of education enables them to understand the dynamics of the competitive world. The attainment of the new democratic order in South Africa has opened doors to interact with companies internationally. In order to be able to compete globally South African companies need to redress the imbalances of the legacy of discriminatory laws in all working sectors. There is a dire need to develop the skills of the employees especially black employees who were denied quality education and deprived of skills in technology, business management, administration to name a few.

This is illustrated by The Sowetan issue date 11/07/01 which reported that South Africa was ranked 94$^{th}$ on the United Nation Human Development Index. This was according to UN Development Programme 2001 Human Development Report. South Africa is well behind some other developing countries such as Malassia 56$^{th}$; Costa Rica 41$^{st}$ ; Uruguay 65$^{th}$ . The report however put South Africa ahead of Namibia 111$^{th}$; India 115$^{th}$ Cameroon 125$^{th}$ and Pakistan 127th .

## 1.2 BACKGROUND AND THE PURPOSE OF THE STUDY

Human assets are our greatest asset which need to be nurtured so that it adds value to the company and individuals themselves. Human asset value can be enhanced if management is interested in how the future performance of the individual is enriched. Past and future performances can only provide some indicator of future performance, (Shaw and Scriven (1996).

South Africa has a history of discrimination with regard to disability, gender and race which deprived access to opportunities for better education, equal employment and wealth creation to the majority of South Africans. In order to redress the above imbalances the democratic government has passed laws such as Employment Equity Act (EEA), Skills Development Act (SDA) and Labour Relations Act (LRA) to name a few. All companies, government sectors and non-government organisations are, by law, compelled to implement the provisions of the above acts.

The study seeks to place more emphasis on the implementation of the EEA and the SDA. One of the provisions to be implemented involves an audit of human resources employed in each sector in order to identify the potential of the existing employees in the company for further development.

## 1.3 METHOD OF APPROACH

The method of data collection used in this study has been based on the relevant literature on learning potential and assessment thereof. The literature provided concepts upon which the problem was analysed and clarified.

A dual methodology was applied. First the learning potential instrument, TRAM-2 was used.TRAM-2 is a learning potential test which intended for literate testees with between 10 and 12 years of education. It is a non-verbal test which assesses the person's capacity to learn in the future. Second, a supervisory questionnaire was employed where the supervisors rated all employees who were assessed by TRAM-2. The data collected from the above methods, that the assessment and the questionnaire were subjected to statistical analysis, mostly by correlating age, education, work-performance and assessment results. From the analysis conclusions were drawn up based on the hypothesis in the study. Suggestions were made for senior management at Denny for consideration with the view to improve the employees' level of capacity to learn and develop at Denny.

In order to widen the field of research, a sample of 55 low level employees with between 8 and 12 years of education was selected.

## 1.4 THE AIM OF THE STUDY

The study aims to investigate the nature of the relationship between learning potentials as assessed by the supervisors at Denny and measured by the TRAM-2.

## 1.5 HYPOTHESIS

There is a relationship between the learning potential and development indicators of employees.

## 1.6 NULL HYPOTHESES

There is no relationship between the learning potential and development indicators of employees.

## 1.7 ASSUMPTIONS

It is assumed that :

- Management is willing to develop employees whose potential has been identified and supported by the supervisors with the purpose of preparing them for improving their performance at work and promotion to senior positions.
- Employees have learning potentials, developmental needs and goals they wish to achieve within the company.

## 1.8 DELIMITATION OF THE STUDY

This study will be conducted at Denny and will be limited to the assessment of learning potentials for development of employees whose level of education ranges from grade 8 to grade 12 inclusive.

## 1.9 THE IMPORTANCE OF THE STUDY

It is the requirement of the EEA and SDA that each company must identify training needs and do skill analysis of its employees so that it is able develop employment equity and skills plans for the company.

Opportunities should be created for all those employees who have been identified to have potential for development, to improve their level of education. This, in turn, will lead to their development to either supervisory/management, or technical or administrative skills. The long term goal or gain is that the employees will improve their performance at work. This will add value to the company and employees will self-actualise themselves.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 INTRODUCTION

This chapter deals with the literature relating to the origin and the current thinking of the concept of learning potential will be discussed. Linked to this will be a discussion on the concept of assessment as seen in the light of the new labour laws such as Employment Equity and Skills Development Acts. Finally, the whole concept of Assessment Learning Potential will be discussed as related to the study in question.

## 2.2 LEARNING POTENTIAL A THEORETICAL PERSPECTIVE

Boeyens (1989) concluded that since early days of theorising about intelligence, the ability to adapt and to learn has been regarded as an integral part of intelligence. Spearman (1904) developed a two-factor theory of intelligence namely:

a) The G factor (general intelligence) which is thought to be inherited intellectual capacity that influences all round performance and
b) The S factor (Specific abilities) which are said to account for differences between task, verbal and mathematics. Terman (1921) saw intelligence as an ability to think abstractly.

Cattel (1965) and Horn (1967 & 1968) supported Spearman's theory and distinguished two types of intelligence namely fluid and crystallised intelligence.

*Fluid intelligence* is seen as the ability to reason abstractly, figure out relations between concepts and free form educational and cultural influences. It is thought of as basic inherited capacity that is developed by an interaction with the environment of society. It is a concept formation capacity which is applied to novel problems and used in the development of new skills and knowledge.

*Crystallised intelligence* is an ability to use of accumulated information to make judgements and solve problems. It has to be learned and it is strongly influenced by culture. These are specific skills and knowledge, which arise as a result of schooling and of becoming competent within one's culture and mastering one's specific circumstances such as job requirements.

Culture and environmental demands determine which skills emerge and these skills are built out of fluid intelligence. Developing crystallised skills does not diminish fluid intelligence. Spearman (1904) defines intelligence as the education of relations and correlates. According to Taylor (1994), the education of relations or the inference of rules and formation of concepts accommodates fluid intelligence. The education of correlates involves the crystallised intelligence. Piaget (1978), sees intelligence as an ability to adapt to once surroundings. He views the development of intellectual as concerned with qualitative changes in intelligence, which results to both maturation and direct exposure to and response of the learner to human beings in the environment. Vygotsky (1978), however, postulates that the intellectual development is not just the acquiring of experience, but it is the fundamental vehicle of education. He stresses the importance of

cultural transmission and intentional mediation of the learners' experience. Taylor (1994) is of the view that the Vygostkian perspective does not clarify the relationship between intelligence as observed on intelligence and learning ability.

According to Taylor (1994), while certain theorist, such as (Jansen, 1982; Vernon, 1986, 1987), claim that information processing capacity and speed is the entire foundation of intelligence and problem solving, and argues that information processing speed and capacity are not the complete foundation of intelligence, although these form one of the two main fundamentals factors of fluid intelligence and information processing. Intelligence involves thinking abstractly. This potentiality is not independent of processing information speedily and accurate.

Taylor (1994) state that Hebb (1949), Vernon (1962), developed a model which assist in the understanding of the inter-relationships among learning, ability and actual performance on conventional tests and distinguished three types of intelligence namely:

- Intelligence A: The individual's ability biological potential is not modifiable. It describes the extent to which the person can benefit from environmental stimulation.
- Intelligence B: The individual's actual intelligence- It is all the cognitive and motivational tools a person acquired through education and acculturation to solve problems and think.
- Intelligence C: The score obtained on an individual using test of ability and knowledge.

Intelligence in general is the ability of an individual to function effectively within the environment.

### 2.2.1 The learning/ dynamic approach

Taylor (1994) sees intelligence as the product of learning and other interactions with the environment. He states that the dynamic approach addresses itself to the assessment of adaptation to novel tasks and potentiality to think abstractly, as evidenced in the mastery or increased speed and accuracy, as a result of repeated exposure, instruction, examples, or hint. Vygotsky (1978) took the view that the acquisition of cognitive competence is a social phenomenon. Adults and older peers pass on to children the knowledge and skills acquired in their culture. He also acknowledges that individuals differ in their capacity to benefit from mediated learning experiences.

Ferguson (1954, 1956) in Taylor (1994) holds that abilities are attributes of behaviour which have attained a certain stability in the adult through a process of learning. Cultural factors prescribes what is to be learned resulting in different patterns of abilities which emerge in different cultures. Abilities emerge through a process of transfer in which existing abilities contribute to the development of new abilities. Hunt (1980) in Taylor (1994) points out that fluid intelligence is a function of cognitive strategies available which assist a person in the process of transfer of skills and knowledge.

Transfer is related to learning set which is learning to learn. Learning set tasks involve the transfer of experience to analogous tasks. Theorists on learning and cognition believe that the capacity to transfer learning is the core to intelligence. Brown and Bryant (1985) in Boeyens (1989) pointed out that the relationship between transfer and intelligence exists only for learning tasks in a learning domain. For transfer to be possible, information must be stored in such away that it is useable in situations analogous to the one in which

learning took place. Strategies must be available for the retrieval of the relevant information and for the modification of the past practice behaviour or values.

As development proceeds, skills and knowledge accumulation of prior learning have a growing impact on the emergence of new skills (Taylor 1994). Kyllonen and Christal (1989), in Taylor (1994), distinguish four sources of individual differences in learning: Knowledge and skills ( the enablers) and processing speed and processing capacity (the mediators).The enablers, thus, would be expected to play a critical role in the transfer required for the development of the later emerging skills. The mediators would be expected to impact on the development of the speed skills. Sternberg (1984) in Taylor (1994) sees coping with novelty and automatization as learning concepts which are fundamental to intelligence.

### 2.2.2 Potential

The development and the roots of potential may be answered by a question which asks where does potential come from? In general terms potential may be described as a maximum level of work challenge that a person can handle provided that he is motivated and interested in doing so. Shaw and Schriven (1996) talk about a combination of qualities of intellect, temperament and practicality. The ability to meet successfully more complex work demands. They assert that these qualities are a result of a basic cognitive and social development patterns, influenced primarily by inherited ability and good parenting in the pre-school years.

Shaw and Schriven (1996) defined potential as the ability to acquire competence now and any time in the future. Potential is the measure of learning ability. People with high potential will be able to learn more and adapt to changes more quickly that people with low potential. They also cite that the relationship between a person's potential and values is of central importance. Values are power to motivation. This centrality of values in converting into directed action must be recognised.

E. Saunders (2000), define potential as something which does not currently exist but which has a capacity to exist given the correct circumstances. In an assessment situation, there is preparedness to give people who have been educationally disadvantaged an opportunity to show their potential and to be placed on a developmental programme which will allow them to develop their potential.

The definition of potential suggests that practical steps in implementing assessment results in putting in place developmental interventions. The assessment of potential is most appropriate in situations where candidates are being assessed for inclusion in the training programmes such as learner-ships or supervisory/management programmes.

Vygotsky (1978), and Feuerstein (1980), developed theories which had considerable impact upon contemporary research on learning potential. They have regarded both environment and socio-cultural experiences as the most important influences on affecting cognitive development. They viewed human cognitive ability as socially mediated. They viewed human beings as open systems that are able to change and learn.

Vygotsky (1978) states that cognitive skills develop in a social context. He argues that

human learning presupposes as specific social nature and a process by which children grow into intellectual life of those around them. Individuals are first socialised by their parents then the society and by the peers as well as their fellow employees and supervisors at work. Vygotsky asserts that learning through social experiences is a prerequisite for mental development. He rejects Piaget's view that mental development facilitates learning, that is, certain developmental levels are prerequisite for learning. He contends that learning causes mental development. He suggests that teaching can facilitate learning.

Feuerstein ( 1980), asserts that cognitive ability to a certain extent is determined by social experience of the individual. Feuersten (1978), in Bell and Wallace (1987), asserts that every cognitive performance is capable of modifiability, whereby the underlying process of thought are altered. This modifiability is possible at all ages and stages of development. Feuerstein (1979) emphasises the importance of modifiability (learning potential) whereas the traditional psychometricians are concerned with assessing what they conceive to be relatively unchanging (static) abilities. Feuerstein believes that learning potential is not static and can be increased and developed through interaction and guidance. He, however, argues that merely changing the environment is not enough and argues that there must be appropriate mediation of the child experiences whereby the underlying cognitive functions are transformed to provide basis for effective thinking.

### 2.2.3 The concept of Zone of Proximal Development

Vygotsky identified two developmental models which have to be determined if one were to discover the relationship between the developmental process and the learning capabilities. According to Vygotsky (1978), learning precedes and enables development. He states that to determine a child's potential to learn, two levels of development should be recognised namely:

*The actual development level* – an already completed developmental cycle which is determined by the ability'

*The potential developmental level*– the level reached after developmental level the relevant instructional intervention. He argues that the above levels of development form a relationship of the development of learning capabilities.

Vygotsky (1978), defined the proximal development as a distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. Vygotsky (1978), states that the zone of proximal development (zpd) is the potential developmental level which indicates the dormant potential development capabilities which need to be tapped, developed and nurtured. ZPD describes the individual potential more effectively than the current performance level. ZPD represent the level of the learners' readiness to learn through intervention or by being taught. Boeyens (1989), argues that the extent to which a previously disadvantaged student will benefit from an enriched educational environment is determined largely by his /her potential to benefit from instructions. ZPD can be effectively used as an acculturation

and as a diagnostic tool in assessment (Belzer 1984). Vygotsky (1978), emphasised the importance of mediation by caregivers between the two levels of development (Feuerstein 1980). He stresses that by mediation the teacher enables the child to learn from direct environmental exposure.

### 2.2.4 Learning Potential and Transfer

Boeyens (1989: 20), defined learning potential as "the difference between the score obtained on the letter series pre-test and scores obtained on the series post-test after a lesson." Notes from Assessment and Development Services describe learning potential as the capacity to acquire new skills of a fairly intellectual nature, demonstrated in improvements in performance in response to cognitive mediation, teaching, feedback or repeated exposure the stimulus material.

The learning potential is also known as the modifiability and ZPD. These ideas are also applicable to Human Resources Development (HRD) just as they are relevant to education. The learning potential scores should be predictive of performance in the HRD context. The scores should be useful when companies offers training and learning programmes.

Taylor (1994), distinguished two types of learning potential namely, the potential which can be actualised through extensive mediation and the teaching of thinking skills. The other potential is revealed in the performance on test that measure learning, either as a result of repeated exposure, or both repeated exposure and instruction or prompts. The former looks at the socialisation of the individual either through formal schooling or acculturation. The later refers to using interventions to close the gap that has been

identified the test measure.

Taylor R (1987), identified three measures of learning potential namely, an initial assessment of performance in the area – a pre test which assess the already acquired knowledge. An intervention to teach/train the individual some of the core concepts or procedures required for effective performance in the area. This is a measure to fill up the gaps that exist in order to fully understand the required concept and procedures. The second assessment of competence in the area – (post test) this is an assessment to determine if the intervention helps to improve the individuals' knowledge of the required concepts and procedures.

Doing the pre-test and post-test items is part of the learning experience in the assessment of learning potential. Taylor (1978) states that the assessment instruments for pre- and post- test should be designed in such a way to make a meaningful difference score possible. Ideally pre-test ant post-test items should be matched. Learning potential measures are likely to be of great use in South Africa as assessment tools. They may also be of use in the development of fair selection for training purposes.

Transfer is an idea which is quite closely related to ZPD. Transfer seems to differ from ZPD in that it indicates the capacity to use acquired skills in new applications, whereas ZPD reflects improvement after intervention. In the same domain, transfer is regarded as very important aspect of intelligence behaviour. Learning deficiency and retarded individuals show particular weaknesses in their ability to transfer learning from one context to

another. Transfer is affected by the way knowledge is stored. A more abstractly stored knowledge is likely to be transferred easily. Boeyens (1989) states that the flexible transfer of knowledge and skills constitutes a central aspect of learning potential. Taylor further makes a distinction between learning performance and learning potential. He conceptualised them as learning analogues of crystallised and fluid intelligence. Learning performance is demonstrated when an individual acquires specialised skills through transfer from other fairly specialised skills or abilities.

## 2.3 ASSESSMENT

The new SA labour relations laws such as LRA, EEA, and SDA have placed a tremendous challenges on how people are assessed at work. Traditionally, the word testing instead of assessment has been used in the training and development and in education. Assessment, however, has been an issue in psychology, industrial psychology as well as in education. In the new context in SA, assessment, in particular psychometric assessment, has come under scrutiny from various quarters and has to face challenges of equity of relevance and of culture fair. The traditional ways of assessment have been critically rejected as unfair, biased, and not taking into account the S African situation. Assessments that are currently done will sometimes have political implications.

### 2.3.1The concept of psychological assessment

Psychology could be defined as the science of the nature of functioning, and development of the human mind including the faculties of reason, emotion, perception and communication (Christianson 1999). Psychology is therefore, a wide concept which would

include the use of psychometric assessment (testing). Christiason further states that psychometric assessment encompasses the scientific measurement of mental capacities and the processes, and of personality, and would be a type of assessment most used in the employment environment for selection, training and development and promotion. Anastasia and Urbina (1997:4), defined a psychological test as essentially "an objective and standardised measure of a sample of behaviour." From this definition, it is likely that people from different cultural backgrounds will perhaps behave differently because of their different upbringing and socialisation as result of the existing diverse cultures.

Meg Pahad on curriculum (2005) defined assessment as a way of finding out what someone knows, understands and can do. While South African Qualifications Authority defines assessment as a structured process for gathering evidence and making judgements about an individual's performance (The skill framework ). From the above it is critically important to note that assessment is not an event/activity taking place at some point in time but a process or a systemic approach to acquire information about the learner in order to make decision if the learner was competent or not. The learner must demonstrate his/her competence. Assessment is done so as to provide the basis of information on which informed decision about the learner can be made.

Assessment can be used for several objectives such as, to give an indication of the learner/employee competence, to give an indication of the employee's strengths and weaknesses and to recognise prior learning as measure of performance. I. Bellis (2000) identified three components of assessment namely:

- Practical component which is the ability to perform a set task,

- the foundation component which is the ability to understand what is being done and
- the reflective component and
- ability to adapt to changing circumstances.

### 2.3.2 Assessment strategy

Assessment process cannot be done in a vacuum. There should be an assessment strategy and policy to drive the process in an organisation. For purposes of this study the assessment will be carried out to meet the aims and objective of the organisation in relation to EEA and SDA. That is to determine the type of pool of employees who could in term of EEA take position at senior level and in term of SDA show potential to learn so that they can be skilled and developed.

The assessment strategy here would be to:

- determine which are the strengths and weaknesses of the learner,
- Determine whether the learner understands the concepts being learned, and,
- Determine whether the learner can transfer and apply the knowledge/ perform task.

### 2.3.3 Areas of assessment

The processes of Human Resources (HR) and HR Development (HRD) have involved assessment in the following areas:

- Selection for employment, which is HR or Personnel function;
- identification and or selection for promotion,
- nomination for Specific education support for specific education, training and or

development, programme at colleges or at universities locally or internationally,

- in testing in training, and,
- assessment to determine potential or fit in terms of attributes and abilities.

This study is about the last three areas of assessment but more specifically learning potential assessment.

### 2.3.4 Purposes of assessment

Assessment in general has a variety of purposes some of which are listed below:

- *Diagnostic*: This is an evaluation of an individual n order to identify the causes of their problems for treatment or developmental purposes.
- *Recruitment and Promotion*: This is assessing and selecting the best candidate for the job.
- *Performance Appraisal* : Performance appraisals ensures that performance on the job meets the standard as set by the company.
- *Checking learners progress*: This ensures that learners are on track towards gaining credit on training courses.

### 2.3.5 Types of assessment

There are a number of types of assessment used namely informal, formal, formative, summative, periodic and peer assessments.

*Formative assessment* is an assessment made during the course of the learning, focussing on assessing progress allowing for adjustment to be made by the learner and the programme if necessary. Formative assessment may be formal, which is continuous or

periodic probes of the learners' progress over certain period of time, or informal and subjective and is commonly known as continuous assessment. It is used to support the learner developmentally and to feedback into the learners' progress.

### 2.3.6 What is good assessment?

Common characteristics (principles) of good assessment

Wherever assessment is taking place, be it at work, school or in projects submitted to employers, the assessment should be undertaken in line with a very clear well known principles. Bellis (2000) identified the following principles regarding the process namely, fairness (equity), validity, reliability and flexibility. The concepts of reliability, validity (are scientific concepts which entrench the credibility of assessment) and fairness will be discussed in detailed under fair assessment.

*Flexibility*: while the assessment must still assess the same skill or learning potential, it may be necessary to slightly alter the way we actually assess certain candidates because of say a disability, special need learners – non English speakers and learners on medication may need shorter assessment to cater for fatigue.

### 3.3.7 Principles regarding the evidence

Bellis (2000), further identified the following principles regarding the evidence namely sufficiency, authenticity, currency and direct.

*Sufficiency:* There must be enough evidence for the assessor to be able to make judgement. I t must be sufficient to establish with confidence that all performance criteria have been

met. There must be sufficient evidence that the competence is truly embedded in the person.

*Authenticity*: The evidence that is being assessed must be attributed to the person being assessed and of some one else. This may not always be possible for certain assessment because of correspondence learning.

*Currency*: The evidence that is gathered must be the evidence of the skill and know how that the person posses at the time of assessment.

*Direct:* The evidence is direct if it is collected from the activities that are as similar as possible to the conditions being assessed.

There are other additional principle of assessment such as systematic, openness and consistency.

Systematic assessment is planning and recording all assessment. This can be done by keeping data in a well managed information system. Assessment is open when learners understand the assessment process and have confidence in the results. This can be improved by consulting learners on the purpose, methods, and procedures for assessment. Learners should be provided with feedback after assessment. Assessment will be consistent if judgement will be similar to judgements that different assessor would make. Consistency can be improved by the assessors' familiarity with assessment guide. Assessment activities should be administered in the same way for each learner and lastly, assessors should keep assessment activities as similar as possible when assessing different learners (Skill Framework Resource Manual).

### 2.3.8 Assessment methods

A variety of methods of assessment are used/applied in the work place. Different methods of assessment may be combined into one assessment activity depending on the context. The methods being used must be culturally fair, objective, valid and reliable. The following aspects should be noted when choosing the method of assessment.

*Appropriateness*: The assessment method should be appropriately chosen to suit the performance or potential being assessed. Assessment guides should specify appropriate method of assessment. Assessors should be trained and be familiar with the assessment method.

*Integrated with work for learning:* Assessment activities can be specifically tailored to the learning of the programme or work that the learner is currently doing. This approach enables assessment to contribute to effective learning. Assessment that take place with learning can reinforce and provide a focus for development or training.

*Manageable:* Assessment method should be easily arranged and not interfere unduly with learning or work. They should not be cumbersome, time consuming and unnecessary intrusive. To improve manageability assessment activities should be kept simple. Activities that can be assessed simultaneously should be integrated.

The following assessment methods can be used in the work place in a learning context. They are psychometric/psychological assessment, structured competency based interviews,

practical assessment centre exercises, work samples, personality questionnaires and cognitive test/ assessment.

For the purposes of this study, the methods of assessment applicable are (a) cognitive assessment which include general reasoning ability test, speed and accuracy, level of mental processing, memory and understanding ability, learning potential and language assessment. (b) Personality assessment that include work ethic and motivation. These methods of assessment are employed in the assessment of learning potential that is the basis of this study and will be discussed below.

## 2.4 FAIR ASSESSMENT

The passing and the implementation of the Employment Equity Act 55 0f 1998 in August 1999 respectively led to a situation in which users of psychological assessment and other similar procedures concerned about the legitimacy of their use of assessment procedures, especially in the industry for purposes of recruitment and selection, training and development and identifying potential. The concern has been the rigid interpretation of section 8 of the Employment Equity Act (EEA).

There are those who were pessimist who argued that psychological assessment was dead. Erasmus and Arumugan (1998) argue that the conventional approach to the standardisation of psychometric assessment and the way in which validity and reliability are traditionally established render it totally impossible to develop assessment that are really fair to all in diverse society. They further argue that the Western psychometric

assessments were sometime adapted but not always adapted to the South African situation. The standards set for these test were generalised to the entire population. The example cited is the Wechster Adult Intelligent Scale, which was not really adapted to the African languages.

Arumugam and Erasmus (1998) further claim that standards applying to the population-at- large cannot be used as standards for making decisions within a diversity of workplace and requirements. Apart form the conventional approach to standardisation, one also needs to establish standards that apply to the specific company; to each of the various section in the same company; to each job type with the company – and to weigh a particular designated group where and when required.

According to Kemp (1999) psychometric assessment still has a future in South Africa as the EEA does not prohibit the use psychological assessment but it calls for the correct use of tests as some qualified test users including psychologist do in any case. He agrees that they are all or none solution providers to selection, training and development and promotion, but they are an aid to the above if used properly to supply invaluable information that can not be gleaned in interviews.

According to Arumugam and Erasmus (1998) the trade union NUMSA in 1992 published a clear and equitable guidelines which among others stated the following:

- the test shall be relevant and properly analysed for the job for which they the applicants are being considered.
- the test should be reliable for applicants
- the test should be valid for the purposes of selection. Validity studies conducted

outside the company for similar purposes may be used as interim measures if the company data is not immediately available. The validity of the tests with the different groups should be investigated empirically.

Kemp (1999) disputes the argument that 'psychometric is dead; long live situation – specific assessment' as purported by Arumugam an Erasmus (1998). He demands proof from those who claim that test are not situation-specific. He disputes it as their personal opinion, a euphemism for psychometric assessment and a marketing ploy. The people who are trained under the old Test Commission system to administer the test, have not kept to date with cultural issues in assessment as well as the changing role of assessment which has occurred as a result of the political transformation. There is also a concern that psychometric test were and in many instances, being used by people who not adequately qualified to use them, this includes certain human resources practitioners and those who are do not have post matric qualification. Much needs to be done in upgrading and transforming the current legal structure surrounding the use of assessment. Saunders 2000. This is supported by (Kemp 1999) who agrees that the existing psychometric instruments need improvement and upgrading.

In terms of the provisions of Section 8 of the EEA (55 of 1998) " Psychological testing and other similar assessment of an employee are prohibited unless the test or assessment being used –

a) has been scientifically shown to be valid and reliable;

b) can be applied fairly to all employees; and

c) is not biased against any employee or group."

Psychological test or assessments have been described above and in addition these test or assessment must be administered by trained and qualified technicians under the guidance of the professional psychologist registered with the South African Medical and Dental Association. All relevant psychological assessment, including psychometrics test, would need to meet the standardisation, reliability and validity requirements of scientific test which have been set out in the EEA.

### 2.4.1 Reliability:

Reliability refers to the consistency of the assessment activities. I Bellis (2000), describes reliability as each time a particular assessment is given it must assess, test for and judge the evidence of the same outcome. Anastasi and Urbana (1997) refer to reliability as the consistency of scores obtained by the same persons when they are re- examined with the same test on different occasions or with different sets of equivalent items, or under other variable examination conditions. That is possible if a same learner were reassessed at a later stage, she/he would perform in the same way unless additional training had taken place.

The concept of reliability is about the ability of the assessment method to produce the same result s when it is used repeatedly over time, regardless who is assessed and when. For a test to be reliable, the design of the assessment needs to incorporate some degree of standardisation in the way it is administered. This means that the assessor must expose the candidates to the same conditions as far as possible, in the assessment context. This principle can be improved by giving clear consistent and unambiguous instructions.

Assessment guides should be well planned.

### 2.4.2 Validity:

Validity means that assessment measures must assess or test what they are supposed to assess not something else. The assessment must measure the learners learning potential ability. De Vos and Fouche' (1998) agree that a measuring instrument must do what it is intended to do. Assessment must fit the purpose. Validity like reliability is an important construct in establishing the credibility of an assessment method. They are also stipulated as prerequisites for fair and acceptable assessment in the EEA. There are many types of validity but for the purposes of this study only content validity, predictive validity and face validity are briefly discussed.

***Predictive validity*** is concerned with the degree to which a particular method of assessment is successful in predicting job performance or learning potential. It tells you the degree to which the results of a particular method of assessment, correlate with work performance. This can be done by simply looking at test results and performance data and looking for correlations between the two will tell a lot about whether the assessments are giving sound information to predict people's future performance on the job (Saunders 2000). Cuellar (1998) believes that the predictive validity of a specific score may differ quite substantially across cultures, and that bias exists when test score differ across groups in relation to an external criterion. When predictive validity differs across cultural groups there is a need to interpret scores base on group specific predictive validity coefficients (Cuellar, 1998). Saunders (2000) state that information regarding the predictive validity

of an assessment method or process is also invaluable in defending assessment decision in arbitration.

*Content validity* refers to whether the content of a test, that is the questions that are asked are valid in elation to the competency that the test is meant to be measuring. Good content validity supports normally good face validity Saunders (2000). According to De Vos and Fouche' (1998) content validity is concerned with the representativeness or sampling adequacy of the content such as topic or items of an instrument. Hudson (1981 in De Vos (1998) summarised by asking a content validity instrument like this, how well does the instrument measure what we want it to measure? He adds that content validity is by and large a judgmental process.

*Face validity* relates to the manner in which the test is perceived by the test candidates. Bless and Higson-Smith (1995), agree that face validity is concerned with the way the instrument appears to the participant. It is important that a test/ assessment be tailored to meet the candidates for whom it is intended.

*Construct validity* is according to Anastasi and Urbani (1997) an extent to which a test measures a theoretical construct or trait such as learning potential.

2.4.3 Fairness:

Fairness is not absolute when using assessment information to make people decisions in the work place. There is no universally accepted conception of fairness; rather' there are many conceptions, each underpinned by a particular value system (Taylor 1992).

Jensen (1980) defines 'fair' and 'unfair' as the manner in which test scores are used when making selection, or promotional decisions. He maintains that terms such as 'fairness', 'social justice' and 'equal protection of the law' are concepts linked to moral, legal and philosophical opinions. Anastasi and Urbani (1997) note that it is inevitable that people holding different views on the meaning of fairness and unfairness will behave differently when making a decision as it is a subjective non scientific concept.

According to Saunders (2000) fairness relates to the impartiality and lack of favouritism and is reflected in our behaviour. She declares that fairness is related to process and structure. She maintains that fairness influences the design of the assessment process, the choice of assessment methods, the structure of the process and the treatment of the outcomes; that objectivity which is an issue for the training of assessors and for each individual assessor to grapple with as they make decisions throughout the assessment process.

For assessment to be to be fair it has to be objective. Saunders (2000), describes objectivity as referring to the process of making judgements independent of previous experience. Objectivity underpins decisions making in assessment and it is strongly influenced by human nature. Objectivity is a concept internal to the individual and applies to all judgements made within the entire process of assessment. She explains that objectivity deals with an individual's ability to put aside inappropriate perceptions and bias, base on past experience and culture when making decisions in assessment situations. She declares that new ways of seeing things and of understanding the cultural and

experiential world of vast variety of different people, are essential for fair and objective assessment.

The principle of fairness means that assessment should not disadvantage any learners by hindering them or advantage learners by assisting them in a way unrelated to the evidence sought. Assessment should not be affected by matters such as race, gender age, disability, social or ethnic background. All learners/ employees for assessment must be given the same equal chance to give evidence of achieving the outcome. This principle can be improved by being clear and available to all learners (transparent). Appeal and reassessment should be accessible to al (The Skills Framework Resource Manual).

Saunders (2000) identified four main issues that influence fairness in the assessment process namely, language differences; prior educational opportunities; performance criteria applied to assessment decision and participation of all interested stake holders in the design of the assessment process – transparency. These issues briefly discussed below.

### 2.4.4 Language differences

Language differences deal with two issues namely second language and cultural factors. *Second language factor:* As we all know in South Africa, assessment is currently conducted mainly in English or Afrikaans. The other seven languages are not catered for that is mother tongue. It is assumed that the candidates sitting for an assessment have enough English vocabulary to cope with the English written on the questionnaire. Candidates sitting for a timed assessment are always disadvantaged because they employ

an internal translation process when responding to assessment question. They first translate the question in their minds into their mother tongue, and then they choose their response (Saunders 2000).

It is difficult to quantify the language factor. Different people have different levels of language ability. This will have an influence on the degree of being disadvantaged in relation to their language ability. The individual with best language skills will be the least disadvantaged. The degree of language ability will therefore influence the outcome of the assessment. The ability to speak, read and write English is also important here. That a person can speak English well does not necessarily mean that she/he can read and write English well. It is easy to learn to speak a language than to learn to read and write language skills. Speaking a language can be informally learned especially in the workplace whereas reading and writing skills needs formal teaching methods (Saunders 2000). It is, therefore, incorrect to assume that people can communicate in the English language.

*Cultural factors*: Language is extremely culture bound. The language vocabulary is therefore commensurate with the culture. Culture bias is deeply embedded in the language issue. There is significance potential for inaccurate translation, distortion of meaning and misunderstanding by the candidates. All assessment methods that have been translated, must be re-validated on the population on which they will be used. New norms must be generated as well as reliability and validity studies.

*Cognitive assessment and language:* Suanders (2000) states that cognitive assessment which relies on language-based test questions is not appropriate in South Africa. Where

language is used instructions should be in appropriate languages and interpreters should be trained assessors who would not elaborate unnecessarily. The following guidelines to assist in this area (Saunders, 2000):

- Avoid using language-based cognitive assessment
- Make sure that assessment instructions are written clearly and that all candidates will be able to understand them.
- Language requirements inherent in the method of assessment, should correlate with language requirements in the job, in a selection assessment.
- Never use personality questionnaire in cross-cultural assessment situations, where language and culture issues are likely to be significant. This is true of most South African assessment situation. It is better to rely on assessment techniques which employ behaviour observation, or other methods of gleaning assessment information about performance such as reference, or employment history.
- When trying to establish language proficiency do not ask people if they can speak English
- The language factor also impacts on the ability of people to interact in assessment centre exercise where they are required to make a contribution to group discussion.

### 2.4.5 Prior education opportunities:

As we all know the legacy of apartheid provided differential learning opportunities for the people of South Africa. The majority of the people were disadvantaged and unfairly assessed and thus prevented from entering into jobs. This has been prohibited by the current labour legislation. Saunders (2000), identified two areas namely the assessment

learning potential (which will be dealt with below) and choosing an appropriate level of test.

Choosing the correct level of assessment should remove the unfair barrier in assessment which used the generic standard of education. This generic standard of education was not job related. The content of assessment methods is normally designed in relation to education. The LRA of 1995 prohibits this. Saunders (2000), recommends that consideration be made to look at the level of problem solving inherent within the position. It is hoped that once the National Qualification Framework is fully established, the level of assessment will be linked to the levels of that framework.

### 2.4.6 Performance criteria applied to assessment decisions:

The last part of assessment involves making decisions about the assessment outcomes and it is here where fairness play an important role. Decision are made about three factors such as cut-off points, weighting competencies and applying employment equity principles to the decision making process. In setting up cut-off points on which to base decisions and standard performance, Saunders (2000) cited two criteria;

- That accurate standards of performance have been identified based on consultation with all relevant stakeholders, that is line managers supervisors job incumbent, performance management personnel.
- That defensible ethics and objectivity were an inherent part of the competency identification process.

Using a cut off point in a rating scale of 1 to 5, 3 will indicate an average ability while a

rating of 1 and 2 will depict under developed abilities and rating 4 is considered above average and 5 a possible 'high flyer'.

Weighing competencies has to do with the behavioural attributes such as interpersonal skills which are less amenable to training compared to language and practical skills which are trainable. One way of making fair decisions is to weight behavioural competencies higher than those areas of performance which will respond readily to training. Persons with potential for a position should be allowed more time to adapt ,adjust and learn new attributes until they achieve adequate levels of competency (Saunders, 2000).

Incorporating employment equity principles into decision-making process encompass compromising on trainable competencies. The EEA justifies the selection or appointment of candidates from members of equity group, with slightly below average ability but have potential to do the job. They should be trainable and training must be provided to ensure that they succeed in their new positions.

### 2.4.7 Participation and transparency in the assessment process:

In order for assessment of employees at the work place to be acceptable honest and open consultation should take place This will help create trust and good relationship between management and employee as it provides needed information and understanding which supports acceptance. This will help reduce rejection of psychometric assessment. Consultation fosters a culture of participation and buy-in into the process of employee assessment. Consultation is provided for in the current labour legislation.

Saunders (2000) agrees with this concept and maintains that the need to entrench transparency, openness and honesty in an assessment process is critical. Saunders (2000) believes that consultation is paramount to fair and objective assessment and it is critical in presenting a water-tight case to the arbitrator in the event the final decision are challenged. Fairness is a multifaceted issue not confined to assessment area only. Specialist in assessment may be required to address specific fairness issues

### 2.2.8 Bias

In subsection 8c of the EEA, the focus is being placed on being unbiased towards any employee or group. The assessment should measure the construct across different population groups. Jansen (1980) refers to bias as systematic errors in the predictive validity of test scores of an individual where these errors are as a result of the individual's group membership.

Saunders (2000) writes that research has shown that culture bias is most relevant and most apparent in personality assessment and in any kind of language based assessment. Saunders further states that culture bias is present in an assessment instrument if it yields significant results for different cultural groups (black and white groups). Saunders warns that caution be exercised when interpreting the results. She sees these differences as not that one group is better that the other, but this should be used to assist in identifying skills gap and implement learning programmes to close these gaps.

## 2.5 ASSESSMENT OF LEARNING POTENTIAL (ALP)

The Assessment of Learning Potential (ALP) has a critical connotation for assessment in SA. It has a critical role to play in the development of people which will in the long term increase productivity of the country. ALP involves the measurement of an individual's ability to benefit from further training and developmental opportunities.

(The ALP) has a strong cognitive element and assumes a developmental context. This means that the ALP measures what people are capable of in the future not what they are capable of currently. It answers the question of how well will the individual respond to if she/he were exposed to quality of learning and experience. It measures the individual's ability to benefit from further training and developmental opportunities. It has a unique contribution for the role it plays in giving developmental opportunities to people who were previously discriminated against. The ALP is therefore not appropriate in a selection context unless it is a trainee position. Therefore the assessment method used minimises the affect of past disadvantage in candidate's educational history.

The following performance criteria which are competencies for employment equity candidates are normally measured in this assessment context:

*Cognitive Assessment*: General reasoning ability; Speed and accuracy of mental processing; Level of mental processing; Memory and understanding ability; Learning potential and Language assessment.

## 2.5.1 The understanding of assessment of recognition of prior learning in the National Qualifications Forum.

Recognition of prior learning in the National Qualification Forum (NQF) may be realised through work place assessment. Workplace assessment is about performance output and not about how competence was acquired. Recognition of prior learning ( rpl) is a process where an individual , regardless of how learning was acquired , can be assessed against a unit standard and be certified as competent by an assessor Sara Babb (1998). RPL concept can be described by similar terms the learner in an appropriate manner. APL forces us to recognise that any experience whether formal or informal, may provide a powerful learning opportunity for an individual which lead to proper assessment,
such as Accreditation of Prior Learning (APL) as it called in Britain and Prior Learning Assessment in USA.

Susan Simosks describes APL as a process that enables people of all ages, backgrounds and attitudes to receive formal recognition for skills and knowledge already possess. It is based on long accepted theories of experiential learning. It is the attainment of competencies skill, knowledge and abilities that are recognised and credited. It focuses on what the individual has learned.

It is important to give an understanding of the word competence. Saunders (2000) defines competence as the knowledge, skills, and behavioural attributes required to perform a job to an acceptable standard. According to Bellis (2000) competence is about performance that is functional and instrumental; it stresses understanding of concepts and is responsive and developmental; it focuses on understanding the system (interpretative)

thus becoming flexible integrative and integrated; and it is innovative and creative. Competence can be seen as not only work related, but can be seen also as in terms of social (interpersonal) skills and intellectual skills as well as manual skills. APL is concerned about four basic processes. It identifies what the individual know and can do. It equals those skills and knowledge with specific standards or courses or qualification requirements. It assesses the individual against the standards or requirements and APL credits

### 2.5.2 Benefits of APL.

The purpose of ALP is to predict the individual's ability to benefit from training and development opportunities often utilised in the identification of Employment Equity/ Affirmative Action candidates.

APL is of significant benefit to both the company and the individuals. APL serves as a powerful motivator for individuals to seek new learning opportunities and complete recognised qualifications. The individual grow self-confidence and are willing to take greater responsibilities for their own development. It enables people to re-enter the job market, explore new careers or seek promotion within the existing organisation.

Companies benefit through APL by using it as a diagnostic tool to identify individuals' strengths and weaknesses. Companies can maximise the effective use of their educational and training resources. Companies are better able to meet the needs of employees. They motivate their employees to participate more willingly in and to complete their learning programme. APL provides greater opportunities to employees.

ALP will be used to assess an individual's ability to learn and to grasp new concepts and apply these concepts into the work environment for an example the supervisory training programme. ALP enables assessors to make an objective decision about individual's ability to benefit from training and developmental opportunities base on a standard assessment procedures.

### 2.5.3 Shortcoming of contemporary attempts to APL.

In South Africa there has been unequal distribution of opportunities which led to fairness hassles in employing assessment of specific skills to make selection, training and promotional decisions.

Boeyens (1989) identified practical problems that have compromised the usefulness of the research on learning potential. The approaches used are time consuming and /or are labour intensive to offer a viable alternative or supplement to the traditional psychometric testing approach. The Feuerstein approach requires a great deal of skilled assessors and one tester per testee and evaluation may take up to an average of twelve hours.

The Zone of Proximal Development (ZPD) is not measured as an improvement in competence. The Soviet method of presenting a problem to the individual and providing clues or hints or prompts toward arriving at a correct solution, cannot be accurately graded. This approach does not strictly adhere to Vygotskian model of learning potential, which states that the ZPD is determined by the improvement of the testee is able to achieve following the intervention.

Conventional tests and the traditional psychometric do no reflect developmental capacity paradigm and are not fully appropriate for learning tests. The assessments are standardized but often biased. These tests are largely clinical and hints are provided to the testees. Tests were designed for low performers and did not achieve the objectives of investigating whether learning potential was independent of social and economic status or of current problem solving abilities. The problem of biased intervention is always present whenever there is a one to one testing situation where a tester assesses the learning potential of a single testee. The difficulty of items can be determined empirically only.

The Learning Potential Assessment Device (LPAD) is adapted from conventional I.Q. tests such as the Ravens Progressive Matrices. When investigating the learning potential, it is necessary to determine precisely the individuals' improvement due to the intervention.

Difference in scores can be unreliable. The learning potential of a testee is the amount by which the individual's performance improves as a result of instruction. The reliability of a different score is reduced by the error in the pre-test and the post-test scores. Conventional ability tests are generally not reliable enough and do not yield sufficiently large difference scores to be usable as instruments for determining learning potential.

The possibility of ceiling effect. Typical psychometric tests are designed so that some bright subjects solve all or almost all items. Such tests are not suitable for the assessment of learning potential.

There is still a need to develop a learning potential assessment technique that would overcome the problems inherent in clinical methods of assessment. Boeyens (1989) contends that a psychometric satisfactory learning potential instrument should measure accurately the amount by which testees' performance improve following an intervention. Boeyens (1989) suggested the following features to overcome the shortcomings of the learning potential assessment:

- The learning potential measure should be time and cost efficient.
- It should be based on methodology different from that of clinical approaches.
- Testees must be given equal opportunity to demonstrate potential to learn.
- The items of the instrument should be drawn from the homogeneous group to eliminate both floor and ceiling effect.
- The pre- and post-tests should be highly analogous so that improvement following an intervention can be assessed with a high degree of accuracy.
- The pre- and post-tests should be highly reliable so that the difference score will have a reasonable reliability. It is imperative that the different score of the learning potential do not reflect errors of measurement.

## 2.6 CONCLUSION

Fairness is a work place multi-faced issue not limited to assessment of learning potential only. It may involve other areas such as selection, training, advancement and promotion. Assessors need to exercise fairness at all times and the testing equipment should be fair and be seen to be fair by the testees. The theory discussed above forms the reference from which practical steps could be taken to actually identify the potential for development of the disadvantaged employees. This involves finding a fair way of assessment which addresses the needs confronting South Africa as it tries through the SDA to built a society that will enjoy economic development and equal opportunities in all spheres of life.

Taylor (1994) concludes that, if we were to address the inequities of the past in South Africa, employers and educationalists will have to place more emphasis on potential rather than skill of specific ability and will have to prepare to give those with high potential the opportunities to develop specific skills through educational, training and other development programs.

# CHAPTER 3.

# RESEARCH DESIGN

## 3.1 INTRODUCTION

This chapter describes the empirical methods used in order to try to answer the research questions of the study. It will remind us of the research aims and hypothesis. These are followed by a description of a sample use in the measurements of the study, the methods and procedure used in capturing, editing and analysis of data. It will conclude by adding shortcomings experienced in the study.

## 3.2 PRESENTATION OF HYPOTHESIS

The purpose of this study is to identify those employees at Denny who have potential to learn and thus further development in relation to the ratings done by supervisors. H.1 There is positive relation between the learning potential and supervisors' ratings of lower level workers.

H.2 Learning potential is a good predictor of how the employees are rated by supervisors.

H.3 Younger employees have greater potential than older people.

## 3.3 DESCRIPTION OF THE SAMPLE

For purposes of this study, the sample size is 55 employees of Denny at Ntshongweni Site in KZN. The target population sample is employees who were previously disadvantaged in education. Their standard of education ranges from grade 8 to grade 12

inclusive. The sample is predominantly black females. The writer would have like to have a larger sample that included other employees from Deodor in Gauteng and Phersentekraal in Western Cape, but due to geographical spread and logistical problems this was not feasible.

## 3.4 THE INSTRUMENT OF MEASUREMENT

There are two types of measurements employed to gather data in this study namely the supervisor rating questionnaire and the TRAM-2 Battery.

### 3.4.1 The Supervisor Rating Questionnaire

In this study a structured /closed questionnaire was employed to obtain information. Closed questions offer the respondent the opportunity to select one or more responses or choices from a number provided to him/her. Close/fixed questionnaires require the informant to select an answer that best suit his/her opinion from a list of alternatives provided by the researcher. According to Haralambos (1980), closed questionnaires provide responses which can be more easily classified and qualified. Structured questionnaires are sometimes a kind of multi-choice questions.

The supervisor rating questionnaires that were given to the departmental supervisors to rate the employees were scaled questions. The questionnaire asked the supervisors to rate their employees on a Likert scale (five point scale- 1 to 5) in terms of their performance at work and to indicate the supervisors' rating of workers in relation ton the six dimensions measured by the TRAM-2 Battery.

The Likert scaled questionnaires are designed in such a way that the supervisors rate employees on scale. A scale question provides information about not exactly or more subjective aspect e.g. the degree of potential competence to perform a task successfully de Vos (1998). The scale questionnaire employed in this study was an ordinal scaling.

It is the most simple form of ordinal scaling which asked respondents to circle one out of five numbers. 1 being very low; 2 being low; 3 being average; 4 being high and 5 being very high.

For any scientific research for it to be credible, it must have two important factors without which the research becomes meaningless. These two factors have been discussed under the fair assessment section and are reliability and validity.

The advantages of structured questionnaire are that, the rater provides relevant information to the purpose of the enquiry. It is simple, quick to administer and inexpensive to analyse. The disadvantage is that it restricts the rater's answer when she/he wants to comment further. The questionnaire is appropriate for those research problems where information sought is sufficiently structured that it can be explained in writing. The rater should also be able to read and write to be able to answer the a questionnaire. The research also need to try to maximise the likelihood that a rater will answer the questions and return them.

According to Haralambos (1980) structured questionnaire does not allow the respondent to qualify and develop his/her answer. The rater may not understand the questions and answer even though they do not have any firm opinion on the matter. They may give an acceptable answer rather than the real one or they may be swayed by the way the question is asked.

### 3.4.2 TRAM- 2 Battery

The second instrument employed is the TRAM-2 Battery which was designed by Dr Terry Taylor. He has vast experience in psychometric domain and his tests are south African based.

The TRAM-2 Battery is a learning potential assessment for people who have between 10 – 12 years of education. The word TRAM is derived from, TR stands for transfer of skills and knowledge learned; A stands for automatisation (the learning curve) and M stands for memory. Tram 2 is designed to select people for technical college. It is also used to evaluate people doing fairly routine, clerical or technical work for further development even development to lower level of management. In such a situation, it is important to ensure that adequate mentoring and developmental programs are in place.

TRAM-2 is designed specifically to identify candidates with the potential to learn new skills and knowledge. Instead of evaluating the individuals' past skill acquisitions, as most conventional ability tests do, this new approach aims at assessing the person's capacity to learn in the future. It gives candidates new cognitive challenging material to learn in the testing situation and assesses the degree of learning which takes place. The learning

material is unrelated to the content of any real-life discipline to prevent any individuals having unfair advantage. The design of TRAM-2 is informed by a review of the literature on learning potential which has been peer reviewed and published in a scientific journal.

The main task of Tram 2 using the Symbol Translation (SymTran) is to confront the testee wit novel challenge. Initially there are instructions for practice and thereafter learning occurs during the test. In contrast to conventional assessment in SymTran the play ground is levelled. No specific skills are required in the test room except for a basic level of literacy. All testee start with zero skills in the SymTran task and all have equal opportunity to acquire the skills during the testing. SymTran is the anchor test of the battery and yields scores such as learning rate, transfer, speed and accuracy.

TRAM-2 is intended to address the inequities of the past in South Africa. TRAM-2 answers the question, can a person acquire the necessary skills within a reasonable period of time if she /he is given the training an development opportunities? The test looks for future skills development. Unlike the previous tests which tended to reward persons who already had necessary skills and abilities and experience for the job at hand .

Tram 2 comprises of three booklets namely:

- Testing booklet – dark green;
- Phase A Dictionary – red and
- Phase B Dictionary – dark blue.

TRAM-2 battery produces scores on the following six dimensions.

- *Conceptual reasoning* – the capacity to think abstractly and detect underlying commonalities while ignoring superficial differences. Taylor (1997) postulates that the work activities require additional effort above simple routine duties. Conceptual thinking plays an important role based on Cattell (1991) in Taylor (1994) who argues that the capacity to think abstractly forms an integral part of fluid intelligence the writer touched above.
- *Automatization* – The process whereby with repeated exposure to a given task, the person progresses from being slow and inefficient at doing tasks to being quick efficient at performing tasks Neubauer (1990). Taylor (1997) rates automatization as one of the two basic processes of learning and transfer. In the revised edition pf Tram 2 (1998), Ackerman (1998) expresses the process of automatization as a learning curve.
- *Transfer* – A process where an individual adapts and applies current skills and knowledge in order to master new challenges. This capacity to transfer is essential to effective performance in the changing environment. The capacity to apply and adapt knowledge is another component of learning potential and is especially important in a working situation where experience gained in one situation may be transferred to another in order to solve a related problem Taylor (1997).
- *Memory and Understanding* – It is an assessment of the degree to which the testee masters and internalises the novel material presented in both phase of Sym-Tran. Memory is a set of scores which measures the capacity to memorise and master

concepts. Test takers who have internalised the information and understood the interrelationships among the concepts often produces higher scores in comparison to those who have just copied the material from the dictionary without attempting to retain the information (Taylor, 1997).

- *Speed* – Speed score reflects the rate at which the testee is likely to work doing a fairly routine work of moderate cognitive difficulty, which requires fairly careful attention to detail. The speed scores do not only high light the rate at which information is processed but also provide an indication of individuals' ability to acquire new competencies.

* *Accuracy* - The accuracy scores reflect the degree to which work/task is free from errors. Taylor (1997) defines accuracy as the incidence of error per block of work.

## 3.5 GUIDELINES FOR EVALUATING ASSESSMENT INSTRUMENTS

Look at the language factor. To avoid the loss of meaning and distortion of culture and social customs, because of complex and difficult translation, a translated test must be validated again to indicate correlation in terms of outcome with the original test.

The instruction of an assessment technique should be written in such a way that regardless of who administers it, the candidates are given the same instructions. This entrenches fairness and reliability. For a assessment to be valid and reliable in the South African context, it must appropriately represent the population demographics of the country. It is suggested that the sample size should be at least 150 persons. Any assessment technique must provide a technical manual with the assessment package. This includes validation

exercise, description of the sample population, definition of construct being measured and explanation of theoretical background of assessment.

Norms tables should be of standardisation or validation process. That is to say, they should render a set of scores for a particular group of people. In industrial settings norms are translated into performance data, which build up history of predicting performance in that company. Check the structure of the standardised report. The computerised report must be flexible and take into account important variations in different assessment contexts. Persons must have skills to interpret, apply and feedback the content of the report sensitively and effectively.

It is critical that assessment package include training which should cover all critical issues of assessment. That is preparing and planning an assessment process; technical assessment skills; dealing with the practical issues of assessment; the ethics of assessment; note taking in assessment; how to feedback assessment results relationship with candidates and some practical issues which underlie fair assessment process.

Check on who marks and generates the reports if you are buying an assessment package from a consultant. Do not compromise on confidentiality.

Have a consultant who knows about assessment and can provide advice and guidance with regard to assessment. He or she must have an understanding of topical issues such as culture bias and assessment in the context of EEA and NQF. Integrity honesty and transparency must be displayed in the way the market of assessment method and in

providing service (Saunders, 2000).

## 3.6 PROCEDURE

The TRAM-2 battery was administered to a sample of Denny employees who had grade 8 up to grade 12 educational level. The order of the battery administration was supervised as per the administrator's manual. The assessment session started with Concept Formation Test followed by Symtran: phase A and B and ending with Memory and Understanding test (when using the full battery, knowledge Transfer is administered last)

Normal testing conditions prevailed in a well ventilated, well lit, quite room with each candidate given their own desk to work on will all assessment material (stationary) being provided and explained.

Instructions were read verbatim from the instruction booklet in a normal fashion stressing the strictness of the assessment conditions and what the testees should be expecting form the test. This instructional routine was followed for the entire test battery and for every group that was tested. Further explanation was given of the layout of the answer sheets in each test and that they may respond by circling or making a cross through the correct answer and how to use the dictionaries that were supplied to them.

All raw data from the test was collected and marked by a qualified psychologist who then fed the test scores information into a computer. The computer will then generate a report for the company/client as well as the report of the testee if s/he requires it and will understand it.

Confidential feedback sessions of results will be carried out with testees by the human resources manager of the company. During this session focus will be on positive achievements. Weaknesses identified will be put as areas of development and suggestions will be made as to how to make improvements on them. Where education and language skill are lacking testees will be encouraged to upgrade their basic education and develop their language skills. Testees will be encouraged to think about their future careers if they aspire to develop to better positions within the company. The departmental heads of the all the employees assessed were asked to complete a questionnaire (see appendix 1 and the summary of results)

## 3.7 CONCLUSION

This chapter has been a description of the research methodology utilised in the study. The following chapter will present the results of the study.

# CHAPTER 4

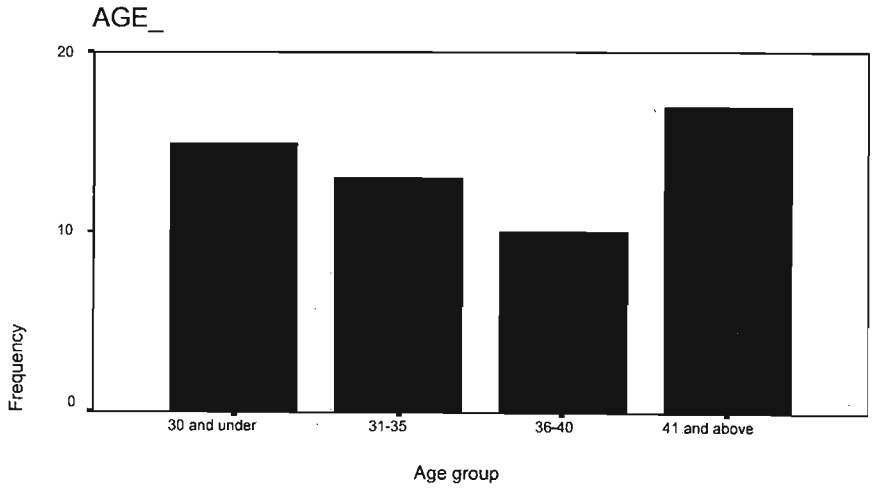
## 4.1PRESENTATION AND EVALUATION OF RESULTS

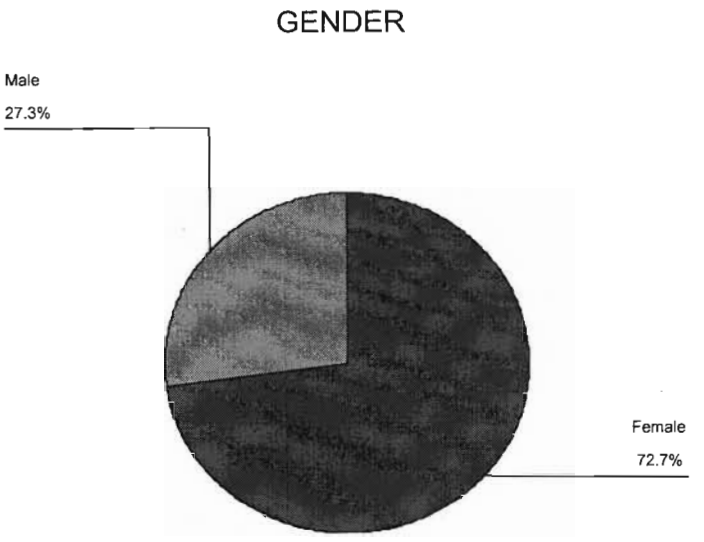
### 4.1.1 Introduction

The primary purpose of this chapter is to present the funding from the assessment and supervisory questionnaire in order to assess the relationship between L.P and development indicator of employees as assessed by Tram 2 and rated by the supervisory at Denny.

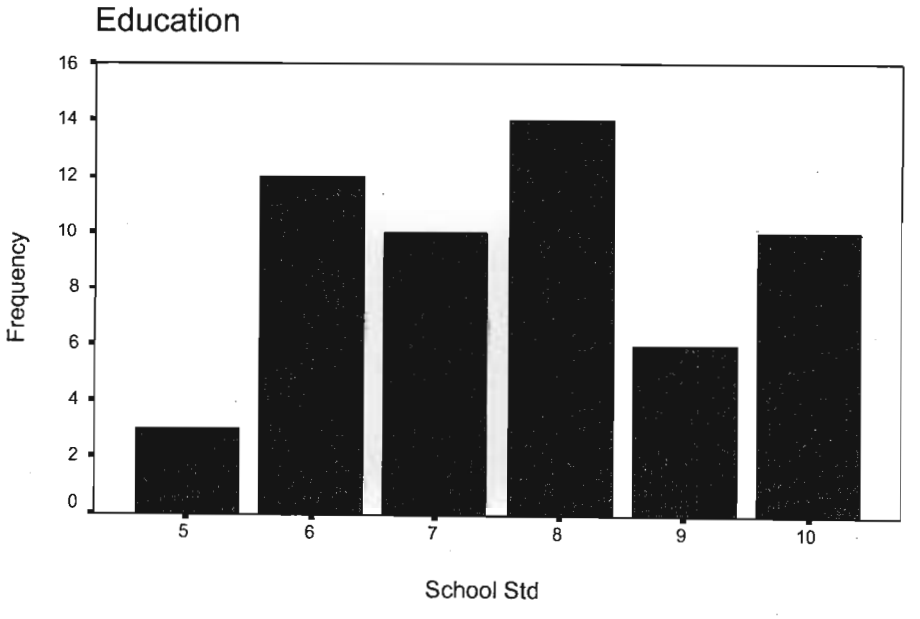
### 4.1.2 The Presentation of Biographical Data

The frequency data show the frequency distributions/counts per category for the biographical variables and assessment questions. The frequency tables on age in table 2 show that 27.3% of the respondents were 30yrs or under; 23.6% were between 31-35 years old. 18.2% were between ages 36-40 and 30.9% were 41yrs and above. The frequency table 2 for gender shows that 72.7% were females and 27.3% were males (see appendix 2: age, education and gender tables)



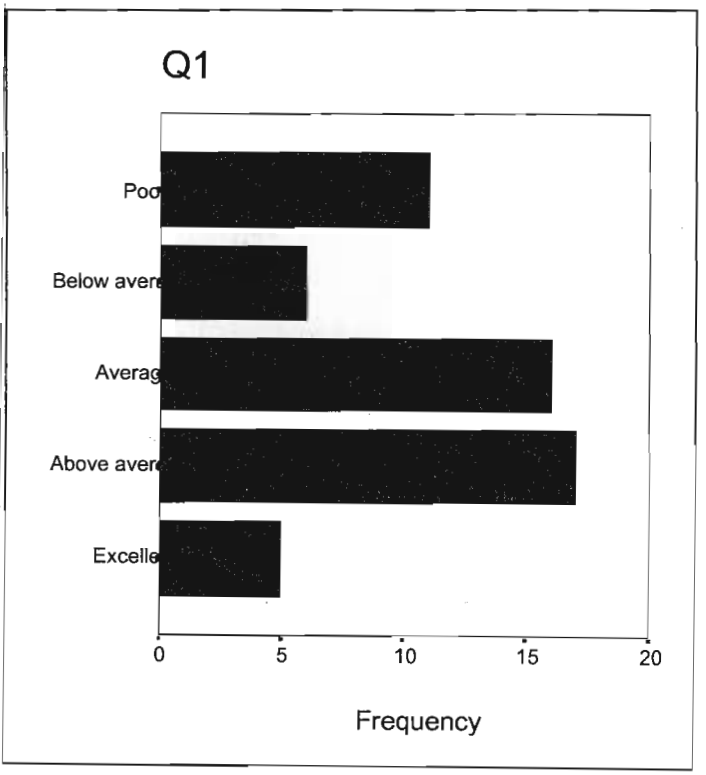


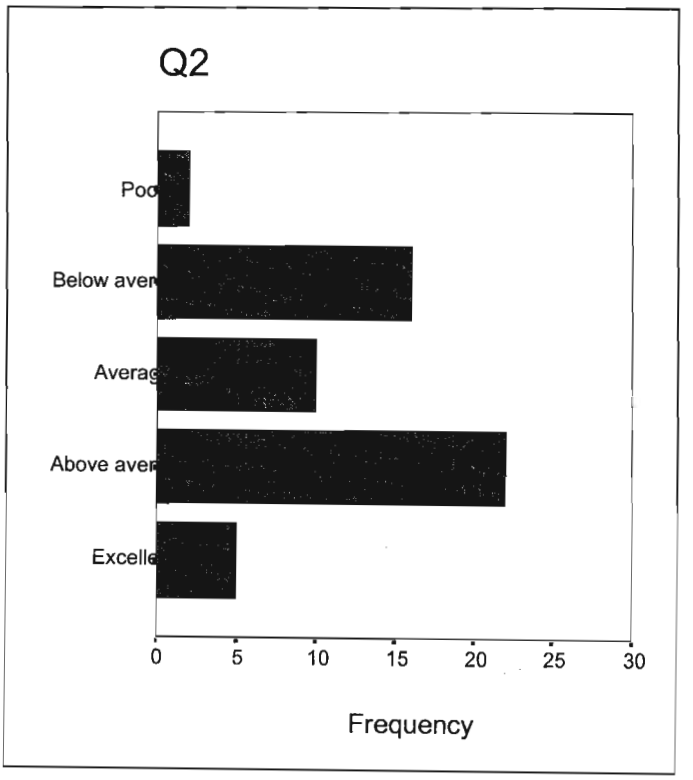

On education 54.5% of the respondents had grade 10 or above of level of education. Of these 71% were males and the majority were 30yrs or below. The data indicate that 56% of female respondents had an educational level of grade 10 and above. The majority of these had 30yrs of age or more. No relationship is shown between age and education.

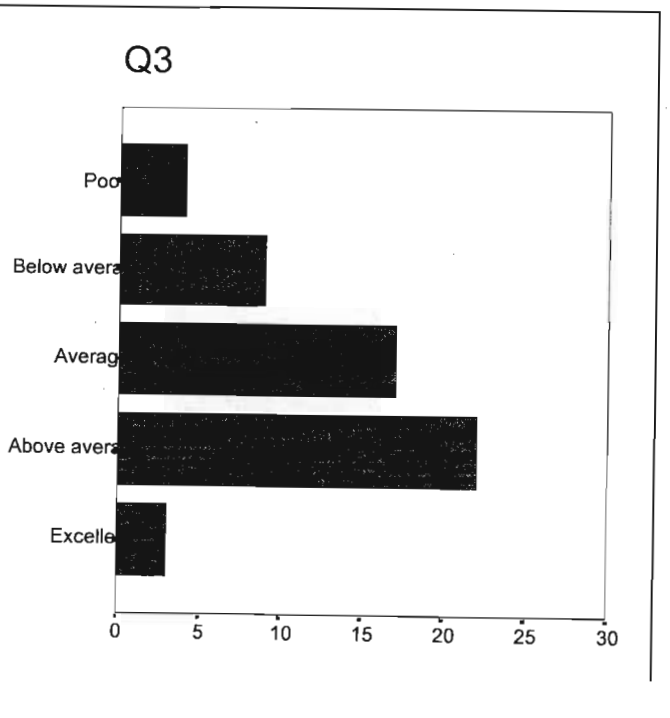


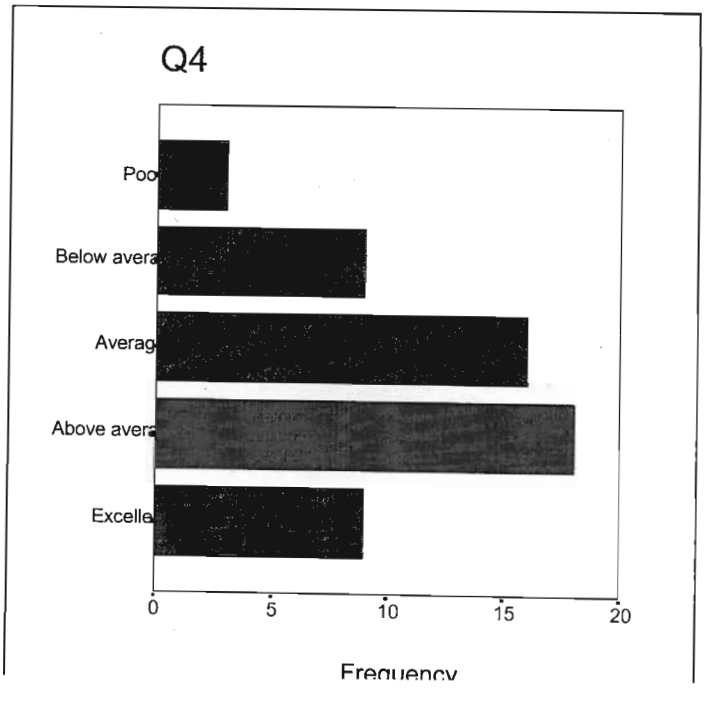
4.1.3 The questionnaire assessment of the respondents by the supervisors.

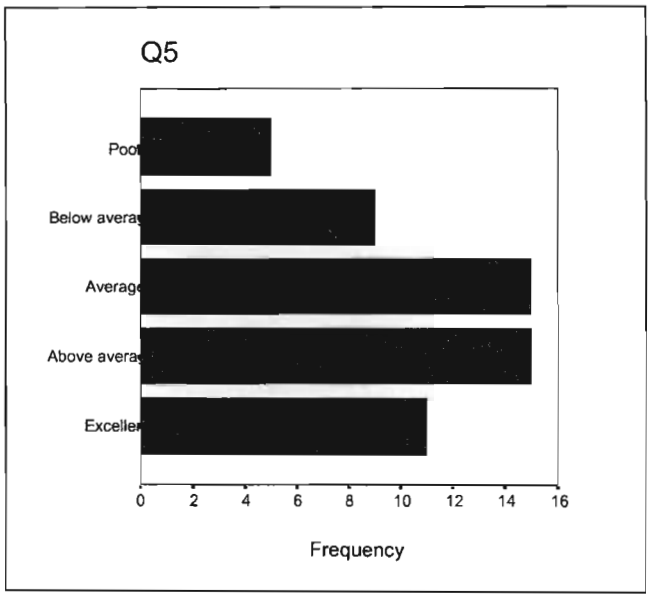
Most respondent were rated above average by the supervisors. This was attributed to the fairly routine work done by the respondents. Their jobs are not heavily intellectual demanding.(See appendix 3, questionnaire tables on questions 1 to 7 ).

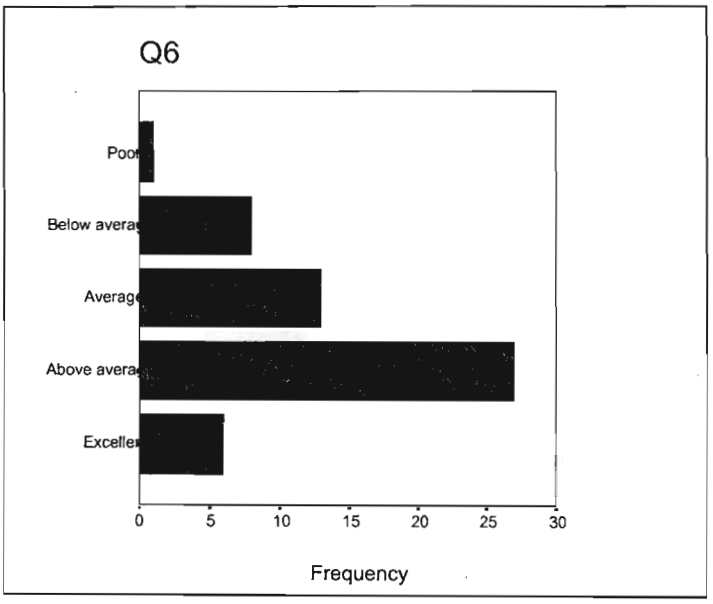


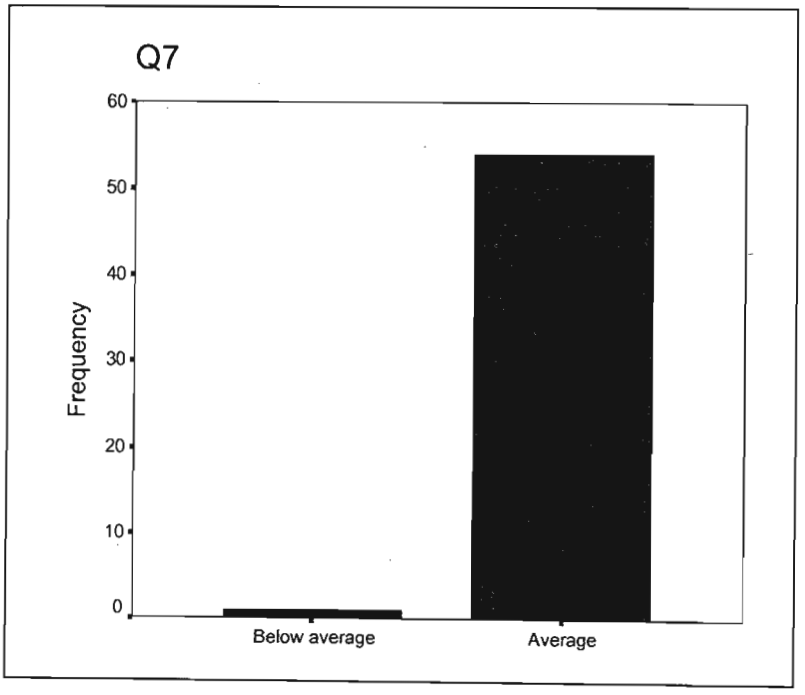




Q5
Poor
Below average
Average
Above average
Excellent
0
2
4
6
8
10
12
14
16
Frequency


Q6
Poor
Below average
Average
Above average
Excellent
0
5
10
15
20
25
30
Frequency


Q7
60
50
40
30
20
10
0
Frequency
Below average
Average

4.1.4 Assessment Result

| Scale | No. of persons |
|---|---|
| Excellent | 1 |
| Above average | 1 |
| Average | 6 |
| Below average | 14 |
| Rather limited | 24 |
| Poor | 9 |

Question 1 (conceptual reasoning)

More respondents were rated average and above average because the work is fairly routine and it is not or does not place heaver intellectual task on them. (69.1%)

Question 2 (automasation)

More than 60% of the respondents were rated average and above. This is because jobs are simple and routine.

Question 3 (transfer)

On the question of transfer 76.3% were rated average and above. This is again because the job task is fairly simple and routine. No real transfer is required on the job task

Question 4 (accuracy)

On the question of accuracy 78.1% were rated average and above. This indicates

that the majority of respondents were able to accurately do their work. This is because their job is simple and repetitive.

Question 5 (speed)

While the majority of the respondents work in areas where speed is required, 74.5% were rated average and above. The result show that the job is simple and routine nature of the job does not impose intellectual demands on the respondents.

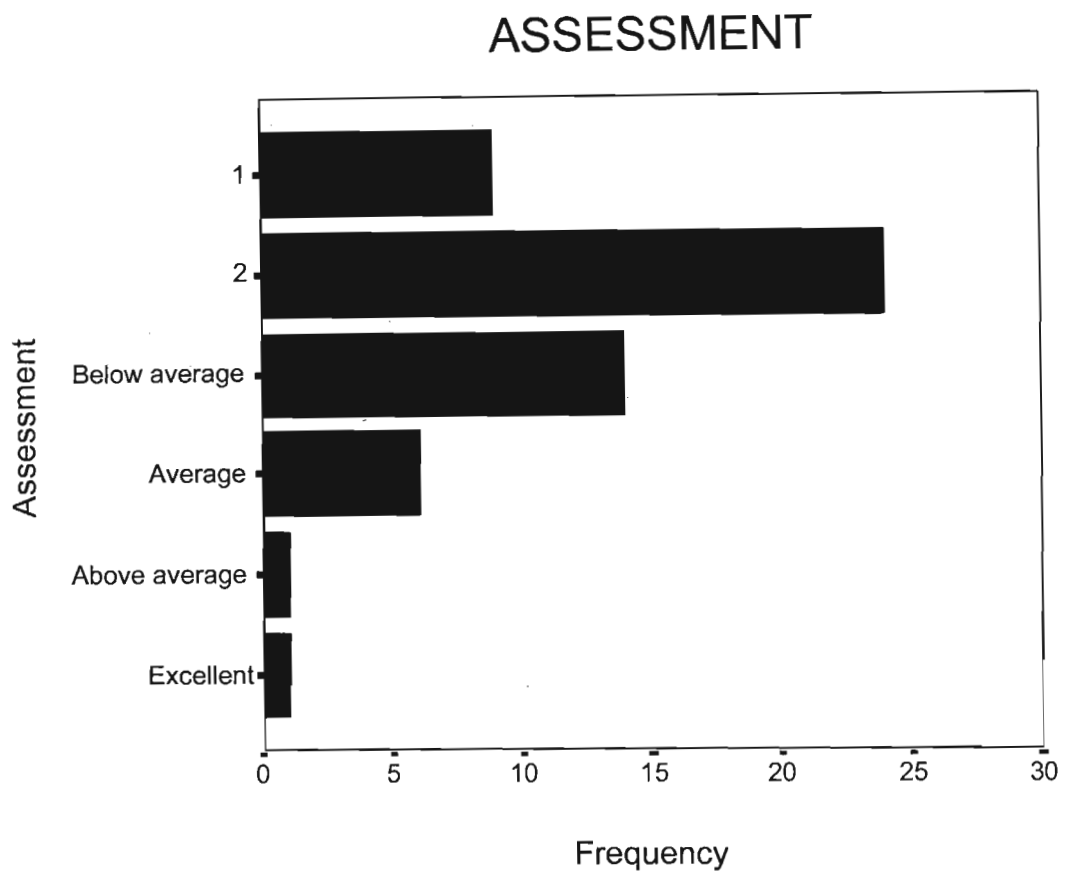
Question 6 (memory)

The results shows that 83.3% the respondents were rated average and above. While the employees understand and can grasp their task but their job is not intellectually demanding.

It should be borne in mind that Tram 2 measures the potential to learn cognitively demanding tasks. It should be noted also that small differences between scores is not significant and decimal points are irrelevant. The disadvantage factor of 3 points has been applied to scores of older people. Hence ¼ as next to some scores. The results show that employees experienced quite some difficulty with Tram 2 Test. Only one person is out outstanding and five persons obtained average scores and the rest are either poor, rather limited, or below average. There is no normal distribution of Tram 2 scores. If there were one it would be skewed to the left. (See appendix 4)

### 4.1.5 The Correlation Results

When the correlation was done, it was clustered onto a 6 point scale poor, rather limited, below average, average, above average and excellent. The correlation results shows there is significant but low correlation between education and assessment. (see appendix 5)




The crosstabs tables on appendix show the counts per category for the assessment and average response to questions 1 to 7. The average response to questions 1 to 7 were obtained by finding the average of questions 1 to 7. The score of ranged from 1.71 to 4.43 and then grouped as follows:

- > 1.5 and <= 2.5, for scores from 1.71 to 2.43
- > 2.5 and <= 3.5, for scored from 2.57 to 3.43
- >3.5 and 3.5, for scores from 3.57 to 4.43.

There were no scores for between 2.43 and 2.57 or between 3.57 to 4.43

The Kendall-tau b statistics tests the relationship between the ordinal categories. The approximate significant value is 0.025 indicating relationship between assessment questions 1 to7 combined. However, the Kendall-tau b value equal to –0.258 is low and shows an inversely relationship that most respondents who scored low on the assessment and scored high on the questions. There are some significant correlations between 1 to 7. (see appendix 6)

The reran of the correlation matrices which included the global score versus work performance showed no correlation. It is perceived as unrelated to the L. P assessment. This is because of the routine kind of work is not intellectually demanding. The work situation is not stimulating. Work performance is not monitoring the cognitive learning. (see appendix 7).

## 4.6. CONCLUSION

In general, the results of the Tram 2 scores show no normal distribution and if it were drawn it would be skewed to the left. There is low but significant relationship between education and assessment. This is because of the simple and repetitive nature of the work done by respondents. The global score shows no relationship between work performance and assessment and it is not intellectually stimulating. The work

situation is not stimulating and does not monitor cognitive learning thus developing their potential.

# CHAPTER 5

## 5.1 SUMMARY OF THE FINDINGS AND RECOMMENDATIONS

### 5.1.1 Introduction

The purpose of this chapter is to give a summary of the findings, conclusions and suggestions that resulted form this study. The following conclusions are drawn based on the interpretation of the results in Chapter four and on the literature review undertaken in Chapter two.

### 5.1.2 Learning Potential Assessment

The initial aim of this study was to investigate the nature of the relationship between learning potential as assessed by the supervisors at Denny and measured by TRAM-2. The study has identified that education appears to indicate learning potential for employees who scored average and above.

The study also indicated that there was no normal distribution curve in terms of the results measured by TRAM-2. The curve was skewed to the left. While nearly half of the employees have less than grade ten level of education, the majority have above grade ten level of education. The study indicated that most employees experienced difficulty in coping with TRAM-2.

Hence the study identified low but significant relationship between education and assessment. This is because of the simple and repetitive nature of the work done by respondents. The jobs do not stimulated the potential of the employees.

It was suggested that they could have done better if they were measured byTRAM-1, which was designed for people with less than grade ten educational level.

The assessment of the employees by the supervisors indicated that the supervisors rated all the respondents average and above. One need to question however their understanding of the questionnaire and the learning potential concept when assessing the respondents.

The global score indicated that there was no correlation between work performance and learning potential assessment. This is because the work performance is not stimulating the potential an the intellect of the employees. It does not support the cognitive learning aspect.

In conclusion, contrary to the study hypotheses, that there is a relationship between the learning potential and development indicators of employees, was not supported. What came out was that most respondents could not cope with TRAM-2 assessment, Irrespective of the level of education, but may have coped well with TRAM-1 measure.

### 5.1.3 Recommendations

It is suggested that employees at Denny be encouraged to enroll privately with institutions that provide education through correspondence for grades ten and Twelve. This would assist the employees in stimulating their untapped potential to learn and open opportunities to trainability and advancement. The challenge would

be to maintain this while working in en environment that is routine and not intellectually stimulating the potential of the employees.

Employees with less than grade seven or no education at all are encourage to learn through Adult Basic Education and Training programs which are facilitated at Denny. While job rotation by employees would to some extent minimize the routines of the jobs they do at Denny, the challenge would be a high level of flexibility by the employees. This would require a high level of understanding the long-term objectives and implications thereof.

In line with skills development and employment equity objectives employees with grades eleven and twelve should be prepared or trained for job advancement through career development. The challenge would be how to deal with expectations created which may lake long to fulfill and to sustain it when you have to wait for natural attrition in jobs for advancement.

## 5.4 GENERAL CONCLUSION

Although the study hypotheses was supported as stated above, the level of education and the repetitive nature of work at Denny has an impact on the learning potential of the employees. The findings suggest that the work situation is not monitoring the cognitive learning, not stimulating the potential intellect of the employees and hinders further training opportunities. The challenge would be to create a work situation which addresses these limitations.

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# APPENDICES

## Appendix 1 : The supervisors rating questionnaire.

Listed below are questionnaire that the supervisors were asked to rate the employees on a five point scale in their departments who have been assessed on learning potential.

The five point scale will mean the following:

1. Poor
2. Below Average
3. Average
4. Above Average
5. Excellent

Please do not overuse the Average point and do not use it to mean 'Do not Know'. Scores will be treated confidentially.

1 How well does the employee grasp and understand tasks that place intellectual demand on her/him? ☐

2 How well does the employee learn intellectually demanding new tasks after instructions and practices ? ☐

3 How do you the employee rate the in terms of his/her ability to transfer or apply principles or concepts previously learnt to new situations ? ☐

4 How do you rate the employee in terms of the accuracy of his or her work ? ☐

5 How do you rate the employee in terms of his/her ability to work quickly ? ☐

6 How would you rate the employee's ability to remember information ? ☐

Please indicate, by circling the number below, how well you know the employee, and to what extent you see him/her regularly to be able to make the above ratings on a 3 point scale:

3. Know employee very well and see him/her almost daily in the work setting.
2. Know employee fairly well and see hi/her in the work setting several times a month.
1. Do not know the employee very well and seldom see him/her in the work context.

# Appendix 2: Frequency tables - Age, Education and Gender

## Frequencies

AGE

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 24 | 2 | 3.6 | 3.6 | 3.6 |
| | 25 | 1 | 1.8 | 1.8 | 5.5 |
| | 27 | 3 | 5.5 | 5.5 | 10.9 |
| | 28 | 3 | 5.5 | 5.5 | 16.4 |
| | 29 | 2 | 3.6 | 3.6 | 20.0 |
| | 30 | 4 | 7.3 | 7.3 | 27.3 |
| | 32 | 1 | 1.8 | 1.8 | 29.1 |
| | 33 | 2 | 3.6 | 3.6 | 32.7 |
| | 34 | 7 | 12.7 | 12.7 | 45.5 |
| | 35 | 3 | 5.5 | 5.5 | 50.9 |
| | 36 | 2 | 3.6 | 3.6 | 54.5 |
| | 38 | 2 | 3.6 | 3.6 | 58.2 |
| | 39 | 3 | 5.5 | 5.5 | 63.6 |
| | 40 | 3 | 5.5 | 5.5 | 69.1 |
| | 41 | 1 | 1.8 | 1.8 | 70.9 |
| | 42 | 5 | 9.1 | 9.1 | 80.0 |
| | 43 | 3 | 5.5 | 5.5 | 85.5 |
| | 44 | 1 | 1.8 | 1.8 | 87.3 |
| | 45 | 3 | 5.5 | 5.5 | 92.7 |
| | 46 | 1 | 1.8 | 1.8 | 94.5 |
| | 49 | 2 | 3.6 | 3.6 | 98.2 |
| | 51 | 1 | 1.8 | 1.8 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

AGE_

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 30 and under | 15 | 27.3 | 27.3 | 27.3 |
| | 31-35 | 13 | 23.6 | 23.6 | 50.9 |
| | 36-40 | 10 | 18.2 | 18.2 | 69.1 |
| | 41 and above | 17 | 30.9 | 30.9 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

EDUCATIO Education

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 5 | 3 | 5.5 | 5.5 | 5.5 |
| | 6 | 12 | 21.8 | 21.8 | 27.3 |
| | 7 | 10 | 18.2 | 18.2 | 45.5 |
| | 8 | 14 | 25.5 | 25.5 | 70.9 |
| | 9 | 6 | 10.9 | 10.9 | 81.8 |
| | 10 | 10 | 18.2 | 18.2 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

GENDER

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 40 | 72.7 | 72.7 | 72.7 |
| | 2 | 15 | 27.3 | 27.3 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

# Appendix 3: Questions 1 to 7 tables

Q1

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 11 | 20.0 | 20.0 | 20.0 |
| | 2 | 6 | 10.9 | 10.9 | 30.9 |
| | 3 | 16 | 29.1 | 29.1 | 60.0 |
| | 4 | 17 | 30.9 | 30.9 | 90.9 |
| | 5 | 5 | 9.1 | 9.1 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

Q2

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 2 | 3.6 | 3.6 | 3.6 |
| | 2 | 16 | 29.1 | 29.1 | 32.7 |
| | 3 | 10 | 18.2 | 18.2 | 50.9 |
| | 4 | 22 | 40.0 | 40.0 | 90.9 |
| | 5 | 5 | 9.1 | 9.1 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

Q3

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 4 | 7.3 | 7.3 | 7.3 |
| | 2 | 9 | 16.4 | 16.4 | 23.6 |
| | 3 | 17 | 30.9 | 30.9 | 54.5 |
| | 4 | 22 | 40.0 | 40.0 | 94.5 |
| | 5 | 3 | 5.5 | 5.5 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

Q4

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 3 | 5.5 | 5.5 | 5.5 |
| | 2 | 9 | 16.4 | 16.4 | 21.8 |
| | 3 | 16 | 29.1 | 29.1 | 50.9 |
| | 4 | 18 | 32.7 | 32.7 | 83.6 |
| | 5 | 9 | 16.4 | 16.4 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

# Appendix 4 TRAM-2 Assessment Results

| Name | Score | Description |
|---|---|---|
| Mr Julius Shange | 75.63 | Excellent |
| Mr Mduduzi Miya | 55.66 | Above Average |
| Ms T M Msomi | 49.77 | Average |
| Mr Alwyn Boys | 49.20(¼) | Average |
| Mr Xolani Ndlovu | 45.81 | Average |
| Ms N I Sakha | 45.71 | Average |
| Ms N E Gamede | 45.43(¼) | Average |
| Ms Busisiwe Njoko | 45.12 | Average |
| Ms Annaclette Mwali | 44.47 | Below Average |
| Ms Nompumelelo N Ndwalane | 44.40 | Below Average |
| Ms V Zondi | 43.88 | Below Average |
| Ms Monica Mdluli | 43.67 | Below Average |
| Ms Cynthia Majozi | 43.33(¼) | Below Average |
| Ms Sophie Mohapi | 42.97(¼) | Below Average |
| Ms Thandi Majozi | 42.89(¼) | Below Average |
| Ms Ziphi Angel Zondi | 42.40 | Below Average |
| Mr M Leteba | 41.26 | Below Average |
| Ms Sbongile Shezi | 41.08(¼) | Below Average |
| Ms N R Ngubane | 40.66 | Below Average |
| Ms Funamina Ndwandwe | 40.53 | Below Average |
| Ms Victoria Madlala | 40.13 | Below Average |
| Ms Juliet Ndlovu | 40.12(¼) | Below Average |
| Miss Barbara Shelembe | 39.81 | Rather Limited |
| Mr Simon Gwala | 38.79 | Rather Limited |
| Mr V Ngcongo | 38.64 | Rather Limited |
| Mr S Zondi | 38.33 | Rather Limited |
| Ms Elizabeth Mlangeni | 37.95(¼) | Rather Limited |
| Ms Ruth Majozi | 37.85 | Rather Limited |
| Mr M Patrick Sithebe | 37.29(¼) | Rather Limited |
| Ms Thozamile M Mdubeki | 36.34 | Rather Limited |
| Ms Florence Mwali | 36.20 | Rather Limited |
| Ms Maryan Mohapi | 36.15 | Rather Limited |
| Ms Bertina Lindiwe Mlisa | 35.58 | Rather Limited |
| Ms Beauty Dlamini | 34.56 | Rather Limited |
| Ms Busisiwe Angeline Nkontwane | 34.30 | Rather Limited |
| Ms Teresa Notununu | 34.29(¼) | Rather Limited |
| Mr B E Khuzwayo | 33.81(¼) | Rather Limited |
| Mr V Dlamini | 33.64 | Rather Limited |
| Ms Lindiwe Mthiyane | 33.27 | Rather Limited |
| Ms Joyce Fisani Mnguni | 32.59 | Rather Limited |
| Ms R D Nzimane | 32.40 | Rather Limited |
| Mr F F Mdluli | 32.12(¼) | Rather Limited |
| Ms Beauty Mlisa | 31.86 | Rather Limited |
| Ms Maureen Meyiwa | 31.44 | Rather Limited |
| Ms N G Gwala | 31.42 | Rather Limited |
| Ms Happiness Dumisa | 30.95 | Rather Limited |
| Ms Priscilla Ndlovu | 29.49 | Poor |
| Ms Gladness Madlala | 28.73(¼) | Poor |
| Ms Dorah Mthethwa | 28.52(¼) | Poor |
| Ms Florence Magwaza Maboto | 28.15 | Poor |
| Mr Bongani Shozi | 28.13 | Poor |
| Ms C Thusini | 27.95 | Poor |
| Mr E T Nyembezi | 26.01 | Poor |
| Ms B P Gumede | 24.98 | Poor |
| Mr Dumile Meyiwa | 24.94(¼) | Poor |

# Appendix 5: Correlations and Assessment

**Correlations**

| | | ASSESSMT | Average response to questions | Education | AGE | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASSESSMT | Pearson Correlati | 1 | -.301* | .323* | .073 | -.158 | -.116 | -.217 | -.096 | -.068 | -.086 | .056 |
| | Sig. (2-tailed) | . | .026 | .016 | .595 | .249 | .400 | .112 | .486 | .620 | .533 | .684 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Average respon: to questions | Pearson Correlati | -.301* | 1 | -.003 | .172 | .844** | .752** | .776** | .695** | .693** | .546** | -.143 |
| | Sig. (2-tailed) | .026 | . | .981 | .208 | .000 | .000 | .000 | .000 | .000 | .000 | .298 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Education | Pearson Correlati | .323* | -.003 | 1 | -.168 | .007 | .098 | -.066 | .027 | .065 | .077 | -.028 |
| | Sig. (2-tailed) | .016 | .981 | . | .221 | .962 | .479 | .631 | .844 | .639 | .576 | .840 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| AGE | Pearson Correlati | .073 | .172 | -.168 | 1 | .211 | .148 | .236 | .099 | .279* | .182 | .146 |
| | Sig. (2-tailed) | .595 | .208 | .221 | . | .122 | .281 | .083 | .472 | .039 | .183 | .289 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q1 | Pearson Correlati | -.158 | .844** | .007 | .211 | 1 | .744** | .714** | .581** | .584** | .489** | -.110 |
| | Sig. (2-tailed) | .249 | .000 | .962 | .122 | . | .000 | .000 | .000 | .000 | .000 | .423 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q2 | Pearson Correlati | -.116 | .752** | .098 | .148 | .744** | 1 | .610** | .636** | .458** | .503** | -.099 |
| | Sig. (2-tailed) | .400 | .000 | .479 | .281 | .000 | . | .000 | .000 | .000 | .000 | .472 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q3 | Pearson Correlati | -.217 | .776** | -.066 | .236 | .714** | .610** | 1 | .548** | .431** | .446** | .027 |
| | Sig. (2-tailed) | .112 | .000 | .631 | .083 | .000 | .000 | . | .000 | .001 | .001 | .846 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q4 | Pearson Correlati | -.096 | .695** | .027 | .099 | .581** | .636** | .548** | 1 | .433** | .211 | -.076 |
| | Sig. (2-tailed) | .486 | .000 | .844 | .472 | .000 | .000 | .000 | . | .001 | .122 | .580 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q5 | Pearson Correlati | -.068 | .693** | .065 | .279* | .584** | .458** | .431** | .433** | 1 | .567** | -.075 |
| | Sig. (2-tailed) | .620 | .000 | .639 | .039 | .000 | .000 | .001 | .001 | . | .000 | .587 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q6 | Pearson Correlati | -.086 | .546** | .077 | .182 | .489** | .503** | .446** | .211 | .567** | 1 | -.069 |
| | Sig. (2-tailed) | .533 | .000 | .576 | .183 | .000 | .000 | .001 | .122 | .000 | . | .616 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q7 | Pearson Correlati | .056 | -.143 | -.028 | .146 | -.110 | -.099 | .027 | -.076 | -.075 | -.069 | 1 |
| | Sig. (2-tailed) | .684 | .298 | .840 | .289 | .423 | .472 | .846 | .580 | .587 | .616 | . |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

- Significant but low correlation between education and Assessment
- Average response to questions is the average of questions 1 to 7. This variable is inversely correlated to Assessment.
- There are some significant correlations between questions 1 to 7.

**ASSESSMT**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 9 | 16.4 | 16.4 | 16.4 |
| | 2 | 24 | 43.6 | 43.6 | 60.0 |
| | 3 | 14 | 25.5 | 25.5 | 85.5 |
| | 4 | 6 | 10.9 | 10.9 | 96.4 |
| | 5 | 1 | 1.8 | 1.8 | 98.2 |
| | 6 | 1 | 1.8 | 1.8 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

# Appendix: 6 Crosstabs

**ASSESSMT * Q_ Average response to questions Crosstabulation**

| | | | Q_ Average response to questions | | | |
|---|---|---|---|---|---|---|
| | | | >1.5 and <2.5 | >=2.5 and <3.5 | >=3.5 | Total |
| ASSESSMT | 1 | Count | 2 | 1 | 6 | 9 |
| | | **Total %** | **3.6%** | **1.8%** | **10.9%** | **16.4%** |
| | 2 | Count | 2 | 9 | 13 | 24 |
| | | **Total %** | **3.6%** | **16.4%** | **23.6%** | **43.6%** |
| | 3 | Count | 3 | 6 | 5 | 14 |
| | | **Total %** | **5.5%** | **10.9%** | **9.1%** | **25.5%** |
| | 4 | Count | 2 | 3 | 1 | 6 |
| | | **Total %** | **3.6%** | **5.5%** | **1.8%** | **10.9%** |
| | 5 | Count | | 1 | | 1 |
| | | **Total %** | | **1.8%** | | **1.8%** |
| | 6 | Count | | 1 | | 1 |
| | | **Total %** | | **1.8%** | | **1.8%** |
| Total | | Count | 9 | 21 | 25 | 55 |
| | | **Total %** | **16.4%** | **38.2%** | **45.5%** | **100.0%** |

**Symmetric Measures**

| | | Value | Asymp. Std. Error[a] | Approx. T[b] | Approx. Sig. |
|---|---|---|---|---|---|
| Ordinal by Ordinal | Kendall's tau-b | -.258 | .115 | -2.239 | .025 |
| | Spearman Correlation | -.291 | .132 | -2.218 | .031[c] |
| Interval by Interval | Pearson's R | -.301 | .112 | -2.296 | .026[c] |
| N of Valid Cases | | 55 | | | |

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

# Appendix 7: Global Score Correlations

**Correlations**

| | | EDUCATIO Education | AGE | ASSESSMT | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | GLOBAL Global Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUCATIO Education | Pearson Correlation | 1 | -.168 | .323* | .007 | .098 | -.066 | .027 | .065 | .077 | -.028 | .398** |
| | Sig. (2-tailed) | . | .221 | .016 | .962 | .479 | .631 | .844 | .639 | .576 | .840 | .003 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| AGE | Pearson Correlation | -.168 | 1 | .073 | .211 | .148 | .236 | .099 | .279* | .182 | .146 | .061 |
| | Sig. (2-tailed) | .221 | . | .595 | .122 | .281 | .083 | .472 | .039 | .183 | .289 | .660 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| ASSESSMT | Pearson Correlation | .323* | .073 | 1 | -.158 | -.116 | -.217 | -.096 | -.068 | -.086 | .056 | .940** |
| | Sig. (2-tailed) | .016 | .595 | . | .249 | .400 | .112 | .486 | .620 | .533 | .684 | .000 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q1 | Pearson Correlation | .007 | .211 | -.158 | 1 | .744** | .714** | .581** | .584** | .489** | -.110 | -.039 |
| | Sig. (2-tailed) | .962 | .122 | .249 | . | .000 | .000 | .000 | .000 | .000 | .423 | .779 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q2 | Pearson Correlation | .098 | .148 | -.116 | .744** | 1 | .610** | .636** | .458** | .503** | -.099 | -.043 |
| | Sig. (2-tailed) | .479 | .281 | .400 | .000 | . | .000 | .000 | .000 | .000 | .472 | .757 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q3 | Pearson Correlation | -.066 | .236 | -.217 | .714** | .610** | 1 | .548** | .431** | .446** | .027 | -.135 |
| | Sig. (2-tailed) | .631 | .083 | .112 | .000 | .000 | . | .000 | .001 | .001 | .846 | .327 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q4 | Pearson Correlation | .027 | .099 | -.096 | .581** | .636** | .548** | 1 | .433** | .211 | -.076 | -.002 |
| | Sig. (2-tailed) | .844 | .472 | .486 | .000 | .000 | .000 | . | .001 | .122 | .580 | .987 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q5 | Pearson Correlation | .065 | .279* | -.068 | .584** | .458** | .431** | .433** | 1 | .567** | -.075 | -.035 |
| | Sig. (2-tailed) | .639 | .039 | .620 | .000 | .000 | .001 | .001 | . | .000 | .587 | .802 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q6 | Pearson Correlation | .077 | .182 | -.086 | .489** | .503** | .446** | .211 | .567** | 1 | -.069 | -.095 |
| | Sig. (2-tailed) | .576 | .183 | .533 | .000 | .000 | .001 | .122 | .000 | . | .616 | .492 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| Q7 | Pearson Correlation | -.028 | .146 | .056 | -.110 | -.099 | .027 | -.076 | -.075 | -.069 | 1 | .033 |
| | Sig. (2-tailed) | .840 | .289 | .684 | .423 | .472 | .846 | .580 | .587 | .616 | . | .813 |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |
| GLOBAL Global Scor | Pearson Correlation | .398** | .061 | .940** | -.039 | -.043 | -.135 | -.002 | -.035 | -.095 | .033 | 1 |
| | Sig. (2-tailed) | .003 | .660 | .000 | .779 | .757 | .327 | .987 | .802 | .492 | .813 | . |
| | N | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |

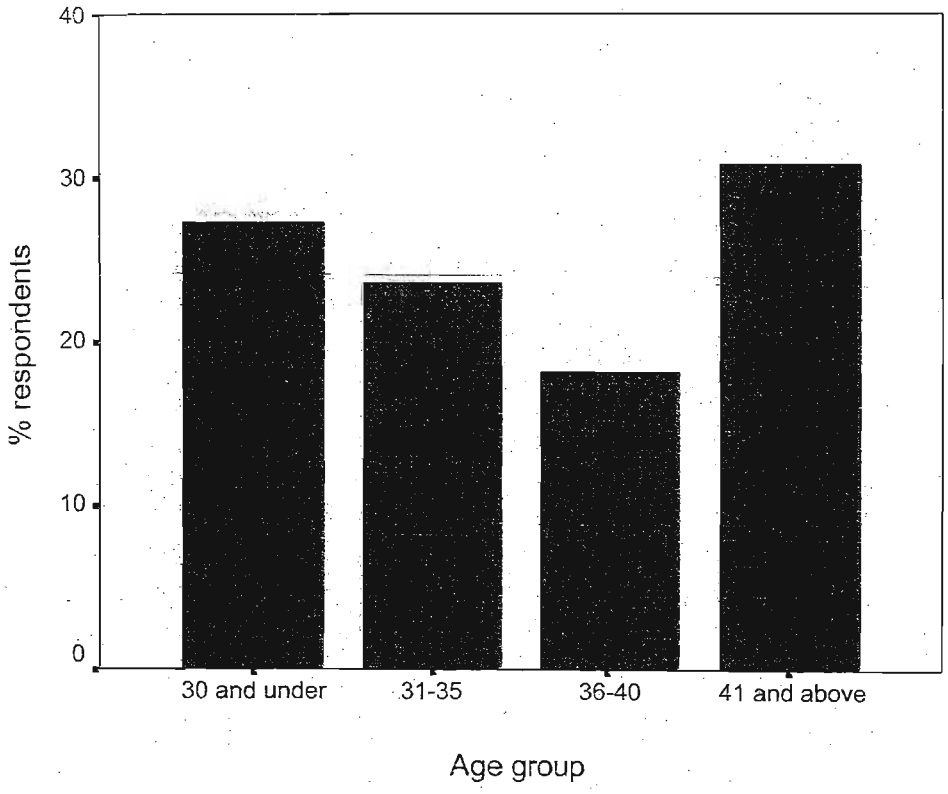
*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

## Appendix 8 Statistics

**Statistics**

| | N | | Mean | Std. Deviation | Skewness |
|---|---|---|---|---|---|
| | Valid | Missing | | | |
| EDUCATIO Education | 55 | 0 | 7.69 | 1.526 | .093 |
| AGE | 55 | 0 | 36.29 | 6.874 | .090 |
| ASSESSMT | 55 | 0 | 2.44 | 1.067 | .930 |
| Q1 | 55 | 0 | 2.98 | 1.269 | -.303 |
| Q2 | 55 | 0 | 3.22 | 1.083 | -.182 |
| Q3 | 55 | 0 | 3.20 | 1.026 | -.526 |
| Q4 | 55 | 0 | 3.38 | 1.114 | -.317 |
| Q5 | 55 | 0 | 3.33 | 1.233 | -.293 |
| Q6 | 55 | 0 | 3.53 | .940 | -.568 |
| Q7 | 55 | 0 | 2.98 | .135 | -7.416 |
| GLOBAL Global Score | 55 | 0 | 38.05 | 8.665 | 1.691 |


40
30
20
10
0
% respondents
30 and under
31-35
36-40
41 and above
Age group

Q5

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 5 | 9.1 | 9.1 | 9.1 |
| | 2 | 9 | 16.4 | 16.4 | 25.5 |
| | 3 | 15 | 27.3 | 27.3 | 52.7 |
| | 4 | 15 | 27.3 | 27.3 | 80.0 |
| | 5 | 11 | 20.0 | 20.0 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

Q6

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 1 | 1.8 | 1.8 | 1.8 |
| | 2 | 8 | 14.5 | 14.5 | 16.4 |
| | 3 | 13 | 23.6 | 23.6 | 40.0 |
| | 4 | 27 | 49.1 | 49.1 | 89.1 |
| | 5 | 6 | 10.9 | 10.9 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |

Q7

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 2 | 1 | 1.8 | 1.8 | 1.8 |
| | 3 | 54 | 98.2 | 98.2 | 100.0 |
| | **Total** | **55** | **100.0** | **100.0** | |