CHAPTER 1

INTRODUCTION

Educational Researchers constitute a community of enquirers. Doing the best they can and (at their best) ever alert to improving their efforts, they seek enlightenment or understanding on issues and problems that are of great social significance
– Phillips and Burbules (2000, p.2).

1 INTRODUCTION

Validity is a crucial component of in educational and psychological measurement and addresses the issue of whether a test is a good measure of the trait it is interpreted to assess (Messick, 1981, p. 5). The purpose of this research study was to explore how the construct validity for the Picture Vocabulary Test used to assess Grade 1 learners could be increased, thus resulting in the inferences being accepted as a true reflection of the test used in this research study. (Validity is discussed in detail in Chapter 3). To achieve the purpose the study made use of empirical investigations to answer the research questions. This was done by exploring how each item functioned, not the learners or any other related aspects. Since only the items were explored, the study follows a Positivist viewpoint as discussed in Chapter 4.

In the Republic of South Africa (RSA), a multilingual population is estimated at approximately 47.4 million, comprising African, Coloured, Indian/Asian and Whites (Statistics SA, 2006). There are diverse linguistic groups, with English, Afrikaans, isiNdebele, isiXhosa, isiZulu, Sesotho, Sepedi, Setswana, SiSwati, Tshivenda and Xitsonga being the eleven official languages. Owing to various factors, including globalisation and migration, there may also be additional diversity in many classroom environments, leaving the educator facing an array of unfamiliar languages. Although the teacher will not be expected to understand all eleven languages, an equal

standard of teaching and assessment across various language groups is a prerequisite in any sphere of education. To incorporate these factors often proves to be particularly challenging when different languages have to be accommodated within one school, particularly where language is associated with differing referencing frameworks, beliefs, ideologies, knowledge systems and socio-economic determinants.

Certain groups may have more exposure to certain objects and pictures than others, and it is on this basis that this research preceded. The aim was to explore how objects used in a Picture Vocabulary Test influence the level of construct validity as well as the inferences made from results. The Picture Vocabulary Test, which forms part of a larger assessment instrument of the South African Monitoring in Primary Schools (SAMP) project, is administered to Grade 1 learners as part of the South African Monitoring in Primary Schools (SAMP) project (see Section 1.2.4). The study examines the way objects used in a Picture Vocabulary Test influence the level of validity. Three different pictures are used in the assessment instrument, with each having increasingly difficult objects to identify as the test progresses. The number of objects the learner is expected to identify varies for each picture. This test, which originated in Durham, England, was designed for learners living in that country, and as a result the objects they were asked to identify related to their surroundings and environment. In South Africa, learners from the various language groups were not necessarily as familiar with these objects, so the pictures were redrawn to fit a more localised context after extensive content validation (Archer, Scherman, Coe & Howie, 2010, p. 79).

South African language groups have their own distinctive referencing framework, culture, and historical background (Cohen, 2003; Cincotta, Wisnewski & Engelman, 2000) which influence the way people think, act and behave, including within the educational sphere. Language is influenced by culture and culture by language. Cultural knowledge is transferred from generation to generation by language as found in Schieffelin and Ochs (1986). The relationship between culture and language is discussed in the next chapter (Section 2.4). In a multi-lingual and multi-cultural society, teaching and assessing of learners from diverse backgrounds therefore presents certain challenges.

1.1 VALIDITY OF ASSESSMENTS ACROSS LANGUAGE GROUPS

Complications exist in ensuring that the inferences made from the results of various forms of assessment used to assess a class of diverse learners are true and of a high standard. Since each language group has a specific background from which to build a referencing framework, it is exposed to situations and objects which may be unfamiliar to another. If they are to be valid, inferences based on the results of the Picture Vocabulary Test therefore need to take into account this diversity.

Each language group has certain differences in Visual Literacy (VL) (see Section 2.2), based on experiences. If learners from a specific language group performed badly in a Picture Vocabulary Test it is possible that it is a case of the test being inadequate rather than the learners being weak. For instance, the objects presented in the test itself might be objects to which that specific group has not been exposed, or that the objects used in it are not common to that particular group. Some objects are much more familiar to one group than the next. Therefore, the inference that learners in a particular language group have greater vocabulary knowledge and visual literacy due to a high score on the Picture Vocabulary Test used in this study, or vice versa, needs to be examined critically.

There has to be common ground for all language groups exposed to assessments which include Picture Vocabulary Tests. Pictures should be employed that are recognisable by all groups and are not biased towards any particular one. The inferences relating to the results of a Picture Vocabulary Test have to be sound. This is especially important for young learners who have had very little exposure to the world surrounding them, except their home environment and this may also have limited resources (Howie, Venter, Van Staden, Zimmerman, Long, Scherman & Archer, 2007). Therefore, the inferences made relating to the assessment results of a Picture Vocabulary Test must be grounded in sound empirical reasoning. If the Picture Vocabulary Test results are poor for a certain learner then the deductions or inferences made about the learner's ability must be accurate, because the test has been constructed with a level of validity. This is achieved when the objects used in the Picture Vocabulary Test are familiar to each group.

Taking the above-mentioned into consideration, the aim of this study is to create a Picture Vocabulary Test that has a high level of construct validity for every language group participating in the test. The aim of this study, therefore, is to explore how the level of construct validity of the Picture Vocabulary Test could be increased so that the inferences made are a true reflection. In the next sections, a background will be provided to the research study.

With this chapter an introduction is given to the study. The background, context and reason for the study are explained in Section 1.2. The research questions and objectives of the study are described in Section 1.5, and a brief description of the rest of the content of the thesis in Section 1.6.

1.2 BACKGROUND TO THE STUDY

In the following paragraphs a detailed description is given of how the assessment and later this study came into existence.

1.2.1 Performance indicators in primary schools (PIPS)

There was a need, in England, to measure the progress that Grade 1 learners were making and, as a result, the PIPS assessment was started in 1993. PIPS was used to track the academic performance of learners in their reception year of school. Originally, 7 schools, that were randomly selected, were involved in the project. In 1994, the number of schools grew to 32, and over a thousand learners. In 1997, there were over two thousand schools participating in the PIPS assessment, but as a result of the responses and comments of educators and data analyses, this grew to four thousand schools, that being the number currently making use of the PIPS assessment in England. The PIPS assessment is also used in Scotland, New Zealand, Australia, the Netherlands and Germany. The main purpose of the PIPS projects was to provide feedback to the schools and teachers so that schools could follow self-evaluation. This monitoring system also allows the educator to detect learners who are either poor achievers' academically or those who are excelling academically, and to monitor learners as a whole. (Tymms & Wylde, 2003; Tymms & Coe, 2003; Merrell & Tymms, 2002; Tymms, 1999, 2001, 2004).

1.2.2 The PIPS Assessment

To construct a reliable assessment of which the inferences are valid and which can be administered in 20 minutes by any capable person with minimal training is an admirable task. When the CEM Centre first developed PIPS, several challenges were encountered, one of which was how to assess the learners as they had no previous schooling and only some had attended pre-school. The second challenge was how to test learners younger than seven, in a manner that was valid and reliable. However, a good assessment is usually a long assessment, and the more items involved the more reliable it is likely to be. Therefore, the longer an assessment the better the reliability, at least to a point before the learner loses interest and becomes distracted. The challenge lies in preventing young learners from becoming bored, since they often have a short concentration span and have to be assessed individually to get the most benefits from the assessments. The younger the child the longer he or she takes to respond to a question. As Tymms (2001, p. 23) writes: “On occasions one has to wait an inordinate amount of time to get a simple response”, but the assessment of young children is very important because it helps to identify any problems that may arise, as well as to make an early diagnosis of academic ability.

The PIPS instrument set out to design an assessment that would be reliable and have results not dependent on who had administered it. An assessment had to be created that would be valid and be able to predict future successes or difficulties of young learners. Focus was placed on the internal and external reliability of the PIPS instrument; as examined in more detail in the methodology chapter.

The content of the PIPS assessment was designed after literature on longitudinal quantitative studies about young learners was read. Various sources of literature could provide relevant information about how, through the measure of vocabulary, later reading could be predicted. The progress of children between the ages of two and four was also monitored from primary school until beyond their schooling career. The PIPS assessment is divided into different sections but each is independent of the other and progresses to a more difficult question, known as ‘adaptive assessment.’ In adaptive assessment the learners are presented with easy questions at first and as

they progress the questions become increasingly difficult. The assessment of that specific section is then terminated when it becomes too difficult for the learner and they can then move on to the next section (Merrell & Tymms, 2002; Tymms & Wylde, 2003; Tymms & Coe, 2003; Tymms, 1999, 2001, 2004).

The PIPS assessment sets out to develop a good monitoring system with which to predict future general academic achievement of the learner. This assessment is complated either on a computer or on paper. In this research study, the paper-based version was used due to a lack of adequate resources at some of the schools. PIPS measures the learners' vocabulary, early reading and early mathematics, and the paper-based PIPS assessment consists of an A4 book with instructions. Questions relating to the various sections are printed on the left for the person making the assessment. On the right-hand side are pictures that form part of the assessment. The learner answers the question by either pointing to the correct answer from various options or by saying the answer. The assessor fills in an answer sheet accordingly. A baseline assessment is made at the beginning of the year and an outcome measure at the end of the year, known as a 'follow-up assessment'. The learners are not asked to repeat the sections they answer correctly in the baseline assessment. The gains are then measured to determine if any progress has been made. The assessment is administered individually to the learner and takes approximately 20 minutes to complete. A table depicting the format and content of the test (Merrell & Tymms, 2005b; Tymms, Merrell & Jones, 2004; Tymms, Merrell & Henderson, 1997, 2000; Tymms, 1999; Tymms & Gallacher, 1995).

Table 3.1: PIPS Assessment Content

FORMAT	CONTENT
Handwriting	The learner is asked to write his or her own name and is allocated marks accordingly.
Vocabulary	The learner is asked to identify objects in a picture; there are three different pictures with progressively more difficult objects to be identified by the learner.
Ideas about Reading	The learner is asked questions about the concepts of print, e.g. Can you show me someone who is reading?
Phonological awareness	The learner is asked to repeat words, e.g. *riotous*, and also asked to identify word that rhyme e.g. *cat* rhymes with *mat*.
Letter identification	The learner is asked to identify a series of upper and lower case letters.
Word recognition and reading	The learner is asked to identify certain words that are accompanied by pictures, but the pictures act as distracters
Ideas about Mathematics	The learner's understanding of mathematical concepts is assessed.
Counting and numbers	The learner is asked to count certain objects and numbers.
Sums	Addition and subtraction are assessed with no symbols.
Shape identification	The learner is asked to identify objects that are, for example, taller, shorter, most, least and so on.
Digit identification	The learners are asked to identify the numbers they see.
Mathematical problems	These are sums with symbols that the learner has to work out, including sentence sums.

Due to the focus of this research, more detail will be given to the vocabulary section of the PIPS assessment. Literature read and researched by the CEM centre has shown that the number of letters a learner knows, as well as their phonological skills

at the beginning of the reception year, plays an important role in the prediction of later reading. Based on this useful information, the vocabulary section was designed.

The Picture Vocabulary Test is a sub test that forms part of a larger instrument of the South African Monitoring in Primary Schools (SAMP) project. The subtest evaluates the receptive vocabulary of the Grade 1 learners (Archer et al., 2010). The first picture used in the assessment is a kitchen scene, with the first object the learners are asked to identify being a carrot. From previous analysis, Tymms, Merrell and Jones (2004, p. 676) assert that "... practically every child starting school at the age of four in England, whose first language is English, can point to the carrots on the picture." The authors further indicate that most learners find it difficult to identify the 'yacht' and 'microscope' at the beginning of the reception year. These objects are found in the last picture where the scene is of a room filled with various objects. The assessment progressively moves to a more difficult object to be identified by the learner and continues until it becomes too difficult. The pictures and more discussions of the PIPS vocabulary assessment and the adapted SAMP vocabulary assessment can be found in Chapter 4.

As mentioned above, the PIPS assessment was adapted for use in countries such as Australia, New Zealand and Scotland, but it did come to the CEM Centre's attention that certain items in the vocabulary section of the assessment behaved a little differently in different countries, for example in Australia. It was more difficult for the Australian speaking children to identify with the word 'wasp' and 'pigeon' than it was for children from England. These items that were seen as unusual and biased were dropped from the next stage of analysis (Merrell & Tymms, 2005a). This was significant because if there were difficulties with Australian children with certain objects, the same might also be said for other countries. This study sets out to explore this point further in relation to the South African context, to which the PIPS assessment came by means of the Centre for Evaluation and Assessment (CEA).

1.2.3 The National Research Foundation Value-Added Project

The research for this master's study was born out of a much larger project, namely the National Research Foundation (NRF) Value-Added Project, which is one of many research projects being conducted by the CEA. It came into being in 2003, as the CEA in collaboration with the CEM Centre started a research project funded by the NRF, a national funding body. The reason for the study was to investigate the adaptation of existing monitoring systems designed in the UK to fit a more South African context. Various assessments were developed by the CEM Centre with the aid of teachers and Local Education Authorities (LEAs) in the UK. These assessments provide the teachers with valuable information about the learner's academic abilities (Tymms & Albone, 2002).

The NRF Value-Added project consists of two initial research projects that focus on two specific points in schooling:

1. **The beginning of the first academic year of the primary schools learner's career.** The original Durham instrument for this phase is known as PIPS and has been adapted to become known as South African Monitoring in Primary Schools (SAMP). (See Section 1.2.4 for a full discussion).

2. **The beginning of secondary schooling.** The original Durham instrument for this phase is known as the Middle Year Information System (MidYIS), which has been adapted to become the South African School Information System (SASSIS).

The reason for choosing the first years of Primary and Secondary schooling was because the educators had very little information on what the learners' academic abilities were at this specific stage of their academic careers (Scherman, Archer, Howie & Lopez, 2006). Through the implementation of these monitoring systems, the educators are given information about the learners' future academic performance and are able to identify any areas that need specific attention. This study focuses on

the primary school monitoring system used to assess Grade 1 learners at the beginning of the year and again at the end of the year (SAMP).

1.2.4 South African Monitoring in Primary Schools (SAMP) project

SAMP assesses Grade 1 learners in the following areas: early phonics, early reading, writing and mathematics (Archer, 2006a & 2006b), but it went through many transformations before it became the instrument it is today.

The original PIPS instrument was used to assess Grade 1 learners (Tymms, Merrell & Jones, 2004) but was designed for learners from England (Archer, 2006a & 2006b). The aim of the instrument was not only to determine the learner's current academic abilities but also to predict the learner's future academic performance (Tymms, Merrell & Henderson, 2000). PIPS was adapted to become Performance Indicators for Primary Schools in South Africa (PIPSSA) to fit a more South African context. The PIPSSA instrument was available in English, Afrikaans, IsiZulu and Sepedi. The PIPSSA instrument was a computer-based assessment and was later adapted to become a paper-based assessment. One of the reasons for this shift to paper-based testing was that a very limited number of schools had access to proper functioning computers (DoE, Draft White Paper on e-education, 2003). Other reasons were that a paper-based assessment allows for a lowering of costs, less administrative work and an easier process of adaptation of the instrument to become more culturally fair. The PIPSSA Picture Vocabulary Test made use of objects that were relevant to England but had to be explored for the South African context. After a number of meetings with professionals from educational and psychological backgrounds the objects were identified that needed to be adapted to fit a more South African background. The SAMP instrument was designed to be much more relevant to the South African context, especially the Picture Vocabulary Test.

1.3 PROBLEM STATEMENT

An important factor influencing a child's emergent literacy is the surrounding natural environment in which the child lives and grows up. There are for instance objects, insects, animals and plants that may not be present in another environment. To give a few examples: a kangaroo or koala bear is typical of Australia, a calabash from which mostly African men drink beer is typically African. Such objects, linked to a specific environment, can influence the construct validity of test designed in the UK when being used in other countries. An object that might be common to one country could be foreign to another. In addition, an object that is easily recognised by learners in one country may be difficult for learners in another country. Considering this point, the way the objects are listed in order of difficulty in the PIPS instrument may or may not be applicable to learners in South Africa. This study sets out to explore whether an empirically sound construct is being measured and how the objects should be arranged in order of difficulty to fit a more South African context, thereby increasing the level of construct validity and ensuring that the inferences reflect the construct it was designed to assess.

When consideration is given to the above aspects, the construct validity of the Picture Vocabulary Test needs to be carefully explored as "validation is the empirical evaluation of the meaning and consequence of measurement" (Messick, 1995, p. 747). If learners participating in a Picture Vocabulary Test have not been exposed to the pictures and objects used in the test, they stand the chance of misinterpreting the pictures and the objects. This leads to questioning the inferences made about the results of the Picture Vocabulary Test. Poor results may not necessarily reflect that the learner has poorly developed vocabulary, but rather depend on whether or not the learner has been exposed to the objects, in order for him or her to identify them.

As there are very large numbers of diverse learners in the South African Grade 1 population, it is of utmost importance that a Picture Vocabulary Test accommodates all the learners. Each learner has a different referencing framework and perception of the world and its surroundings, but to argue that all Grade 1 learners have an equal level of visual literacy as evidenced by the Picture Vocabulary Test, a solid

referencing framework and a proficient perception of the surrounding world, would be naïve. These variations influence the way learners react and answer when asked to identify objects in a Picture Vocabulary Test. These factors have to be taken into consideration since they play an important role in how learners achieve in a Picture Vocabulary Test.

This leads to the question of the importance validity plays in the Picture Vocabulary Test of the SAMP instrument (Gay & Airasian, 2003; McMillan & Schumacher, 2006; Popham, 1999). Inferences that are made from the results of an assessment must be valid, and inferences about the results of the number of correct or incorrect objects identified in a Picture Vocabulary Test must also be true. For example, if a learner were to perform exceptionally weakly in a Picture Vocabulary Test, would the inferences that the learner has a poorly developed vocabulary reflect the truth in the SAMP Picture Vocabulary Test? The inferences in this case are that the learner has a poor level of vocabulary relating to the objects he/she was asked to identify in the Picture Vocabulary Test. However, it could be that the items were not constructed in the correct manner from easy to difficult. If this were the case then the inferences made about the specific learner's vocabulary knowledge based on the results of the Picture Vocabulary Test for this specific learner would be incorrect. The South African Qualifications Authority (SAQA) states specifically that assessment should be valid, reliable, fair and practical (SAQA, 2009). This research study sets out to explore the construct validity and inferences made about the results of the Picture Vocabulary Tests and ascertain whether they are in place.

1.4 RATIONALE FOR THE STUDY

Being a developing country, South Africa is faced with challenges such as multilingualism, poor schooling conditions and a limited amount of resources that are presented in all eleven languages (Scherman, Archer & Howie, 2006). As indicated above, although language groups have a few commonalities, clear distinctions are also evident, which leads learners to develop their own unique perceptions and levels of visual literacy and resulting vocabulary. These factors introduce a challenge for assessment that makes use of various objects that need to be identified in a Picture

Vocabulary Test. The research study sets out to determine whether the inferences made about the results of the Picture Vocabulary Test are true, as is the level of construct validity. Suggestions will be made as to how these factors can be addressed to assure correct inferences and a high level of construct validity.

The researcher became interested in this research study after working in an initial research study called PIPSSA, which evolved into SAMP. The first research study, PIPSSA, was developed overseas and used pictures in the picture vocabulary section which were developed according to the culture and traditions of England, with little or no overlap with South African context, as previous discussed. The broader project deals with the feasibility of adapting the English monitoring systems to the South African context. A key concept in the feasibility of the project is validity, which is multi-layered and is seen as a unitary concept consisting of various components but with the primary focus on content validation. When it was decided, after a panel discussion with various professionals, to adapt the study to suit the South African context, the construct validity had to be investigated to see if it was still of a high level. The items that were difficult for the learners in England were easy for the South African children, and visa versa. An example of this is the word ‘padlock’ that was used in the second Picture Vocabulary Test (discussed in the methodology chapter). For the learners from England the padlock was seen as a relatively difficult object to identify, whereas for the learners from South Africa this seemed to be an easy object to identify, perhaps because of a greater level of crime. A reverse situation also occurred when the learners were asked to identify a yacht in the third Picture Vocabulary Test. The yacht was first on the list of objects to be identified, meaning it was easier for the learners to identify than the rest of the objects that followed. For the learners from South Africa the yacht appeared to be one the most difficult items to identify, perhaps because learners are more familiar with the term ‘boat’.

The researcher became curious as to whether the objects in the Picture Vocabulary Test from the adapted SAMP assessment were in the right order of difficulty. The researcher noticed that the learners were identifying certain objects more readily than others that were supposed to be easy. As a result, a need was identified to explore the construct validity of the new SAMP Picture Vocabulary Test, as well as the level

of construct validity with regard to the inferences made about the results of the Picture Vocabulary Test.

This research will be valuable to:

- Researchers taking part in similar studies wanting more accurate results in assessment conducted with various cultural groups within the South African context.
- Instrument development specialists who will test learners from various language groups in South Africa
- Teachers of learners from various language groups who have to be assessed within the South African context.
- Policy makers in developing multilingual assessment policies for the South African context.

1.5 AIMS AND OBJECTIVES OF THE STUDY

The main reason for conducting this study is to explore how the level of construct validity of a Picture Vocabulary Test could be increased so that the inferences made are a true reflection. Furthermore, the study aims to investigate what would be the most effective manner to present the items. The study also intends to recommend possible ways to present the items so that a high level of validity will be maintained across all three language groups participating in the study.

1.6 RESEARCH QUESTIONS

Against the above background, the main research question that guides the study is:

How do objects used in a Picture Vocabulary Test influence the level of validity?

The main research question was broken down into more detailed questions displayed.

1.6.1 Sub Research Questions

The main research question has been broken down into more detailed questions that can lead the research study to explore objective answers.

How do objects used in a Picture Vocabulary Test influence the level of validity?

This question explores literature to identify barriers to the validity level of the Picture Vocabulary Test. Areas that were most applicable to this study were explored. The areas where barriers could be identified were language, culture and Visual Literacy. These are discussed in detail in Chapter 2.

To what extent is an undimensional trait measured by a Picture Vocabulary Test?

This question explores whether objects used in pictures in the Picture Vocabulary Test are measuring a single trait or ability of the learners. The assumption is that all the objects included in the Picture Vocabulary Test measures the trait; in this case the trait is vocabulary. The ability of the learner to identify objects presented in a Picture Vocabulary Test.

To what extent do the items in a Picture Vocabulary Test perform the same for the different language groups?

Once it has been established that an undimensional trait is measured by the Picture Vocabulary Test the items will be explored even further by means of examining whether the items are functioning the same for different language groups.

How can the identified barriers that decrease the level of validity be minimized?

This question aims to provide suggestions as to how the objects that are barriers to the construct validity and the inferences made can be effectively addressed. The suggestions will try to provide insight into the means to increase the construct validity and decrease barriers that are detrimental to validity.

Considering the abovementioned questions this study follows a Positivist paradigm in order that the research questions could be investigated empirically. A Positivists viewpoint allows the focus to be solely on the items used in the Picture Vocabulary Test and not the learners, schools, educators or anything else. This is based on the fact that Positivism sees science as not needing to have a prior sense of the whole to which different parts belong in order for the different parts to be studied (Fischer, 1991).

1.7 CONCLUSION

This chapter gave an outline of the study that takes place, its origin, the research questions that guided it and the methodology used. This study is undertaken from a Positivist viewpoint to provide advice on how to increase the level of validity for the Picture Vocabulary Test. The various items used in the assessment are investigated to determine their fit and difficulty level in the Picture Vocabulary Test. With the improved understanding of how the items perform suggestions and recommendations can be made as to how the level of validity can be increased. This study is guided by the main research question that leads to the information found in subsequent chapters.

This study is divided into seven chapters, each of which has a distinct purpose of leading to the answer of the main research question. A definite line linking the

chapters to the main goal can be seen. **Chapter Two** is a literature review examining various factors that play a role in influencing the learners' ability to identify objects presented in pictures. In this chapter the eclectic definitions of Visual Literacy are narrowed down to what is most appropriate for this study. The close union of language and culture are discussed and the conceptual framework is given of this study. Validity and reliability and their interrelating role are discussed in **Chapter Three.** In **Chapter Four** the methodology of the study is discussed together with the theoretical framework (Positivism) the study followed. The sample of Grade 1 learners speaking Afrikaans, English and Sepedi participated in a Picture Vocabulary Test that has 22 objects ranging from easy to difficult. The study makes use of the Positivist paradigm using statistical procedures with the help of Rasch analyses to explore the data. **Chapter Five** discusses the findings of the data analysed. The entire group of learners' performances are discussed as well as each individual language group. The learners' abilities are matched to the items' difficulties. Items that are not performing as expected are also identified. Reflections on the study are described in **Chapter Six.** Finally in **Chapter Seven** the findings are discussed and recommendations are made regarding improvements that can be made on assessments used across languages and culture and a conclusion is drawn to the study.

CHAPTER 2

LITERATURE REVIEW

2 LITERATURE REVIEW

2.1 INTRODUCTION

South Africa's education system has undergone a number of changes since the first democratic election in 1994, in particular the language curriculum. Significant to this curriculum is visual literacy, in which the identification of pictures plays a crucial role in the development of reading for young learners.

In this chapter a review of the literature relating to the study is provided. It begins with background information to Foundation Phase education in South Africa (Section 2.1), since that is a basis for the discussion of teaching and assessment of literacy, in line with the aim of the study to explore how objects used in a Picture Vocabulary Test influence the level of construct validity, as well as the inferences made. This Picture Vocabulary Test is part the PIPS and adapted SAMP monitoring system, introduced and outlined in the previous chapter. The assessment is administered in the Foundation Phase at the beginning of the year and then again at the end of the year in the home language of English, Afrikaans or Sepedi, and is considered a highly effective tool for the prediction of the future academic performance of learners. However, there are a number of factors that influence the level of validity of monitoring systems, or at least parts thereof, as well as a learner's ability to identify objects presented in the test. A number of topics, such as Visual Literacy (Section 2.2), Pictures (Section 2.3), Language and Culture (Section 2.4), are discussed as they play a vital role in influencing the level of construct validity of the test. The chapter concludes with a discussion of the conceptual framework (Section 2.5) that emerges from the literature reviewed in this chapter. The relationship between each of these aspects of the framework and how they influence the level of construct validity is explored.

2.2 BACKGROUND TO FOUNDATION PHASE EDUCATION IN SOUTH AFRICA

South African education has undergone a dramatic change with the introduction of a curriculum that follows an Outcomes Based approach to learning. As background information, the description of the education is provided, including the three bands of education, making reference to relevant policies such as the Revised National Curriculum Statement (RNCS, 2002c) and the policy on Assessment and Qualifications for Schools in the General Education and Training Band (2001).

There are three bands of education in South Africa, recognised by the National Qualifications Framework (NQF). The band relevant to this study is General Education and Training (GET), made up of three phases beginning at Grade 0 (also known as Grade R) through to Grade 9, and comprising a total of nine years of schooling before the learner is allowed to legally exit the school system. This study is situated in the first phase, the Foundation Phase, which runs from Grade 0 to Grade 3. The South African Schools Act of 1996 makes schooling compulsory from Grade 1 or the age of seven, but it is not compulsory for learners to attend Grade 0 (Education in SA, 2009).

According to the DoE report of 2006 there are 15,676 primary schools in South Africa, with 6 289 530 learners and 190 389 educators, a ratio of 33:1. In the Foundation Phase alone there are a total of 3 807 756 learners, with 52% male and 48.5% female. More than half of the total number of primary school learners is found in the Foundation Phase (DoE, 2006, p.). Most of the Foundation Phase classrooms are filled with culturally diverse learners from various ethnic backgrounds, placing an immense load on educators and persons involved in education to fulfil the educational needs and requirements set out by the DoE and its policies (DoE, 2006).

2.2.1 The Teaching of Literacy at the Foundation Phase

The RNCS gives a broad overview of what is expected of the educator and what the learner is to be taught in the Foundation Phase, as well as understanding the need to develop the " …full potential of each learner as a citizen of a democratic South Africa" (DoE, 2002a). In the development of literacy, emphasis is put on all learners learning their home language or mother tongue for a minimum of 3 years until the end of the GET band (Grade 3), and at least one additional language such as English which may become the Language of Learning and Teaching (LoLT). This means that learners must become competent in an additional language while maintaining their home language.

Since this research study focuses more on vocabulary and literacy skills, a discussion of the development of literacy will follow, with attention being given to the six language outcomes (DoE, 2002a):

Learning Outcome 1: Listening - the learner will be able to listen for information and enjoyment, and respond appropriately and critically to a wide range of situations.

Learning Outcome 2: Speaking - the learner will be able to communicate confidently and effectively in a spoken language in a wide range of situations.

Learning Outcome 3: Reading and Viewing - the learner will be able to read and view for information and enjoyment, and respond critically to the aesthetic, cultural and emotional values in texts. This outcome plays a vital role in a learner's Visual Literacy development (discussed in detail in Section 2.2).

Learning Outcome 4: Writing - the learner will be able to write different kinds of factual and imaginative texts for a wide range of purposes.

Learning Outcome 5: Thinking and Reasoning - the learner will be able to use language to think and reason, as well as to access, process and use information for learning.

Learning Outcome 6: Language Structure and Use - the learner will be able to use the sounds, words and grammar of the language to create and interpret texts.

These outcomes guide the teacher in the teaching and learning of literacy, focusing on speaking, viewing, reading, writing, reasoning and thinking, as well as increasing exposure to pictures and objects (DoE, 2002c). With this type of exposure the level of visual literacy of the learners can be improved upon. The more trained the learners become at achieving these six outcomes, the greater their competency in participating in any form of literacy test.

The early years of schooling play a vital role in developing emergent literacy through exposing young learners to stories (DoE 2002a). In listening to the stories and understanding how they are constructed, language develops naturally and assists learners when they begin to read and write. Emergent literacy is developed in the following ways:

- Seeing signs in the environment and understanding that they signify something;
- Using rhymes that play with language and develop awareness of the separate sounds of the new language (phonemic awareness);
- Trying to read and write in their language, even though their writing may look like scribbles on a page (DoE, 2002a, p. 9).

Teaching Reading in the Early Grades (DoE, 2008) is a handbook that has been designed by the DoE to provide the educator with guidelines to ensure that all children learn to read. It highlights the core elements needed for teaching and reading in the early grades, including the essential knowledge and skills required to help learners read. The time that should be spent on learning and teaching literacy is 1 hour and 50 minutes per day, or a total of 9 hours and 10 minutes per week. The core elements for the teaching of literacy are as follows:

Reading and Writing Focus Time

During this time, basic literacy skills are taught and it is suggested that an hour a day is spent on reading and writing. The activities are shared writing, shared reading, word-level and sentence-level work, guided reading and writing and independent reading and writing activities. With the word-level and sentence-level, special focus is placed on phonics, spelling, vocabulary development, grammar, sentence work and punctuation.

Listening and Speaking

Listening, speaking and writing form part of literacy development, as well as helping a learner to develop thinking and reading skills.

Writing

With the writing activities, learners learn how to form letters, words and numbers. More time is spent on writing in the Foundation Phase than any other phase.

2.2.2 Assessment in the Foundation Phase

The purpose of assessment is to gain information about a learner's strengths and weaknesses in a particular area, leading to decisions based on valid inferences and that should be both challenging and reflect the knowledge and skills of the learners (Vandeyar & Killen, 2003; Killen, 2002).

The implications of assessment are far-reaching in educational settings, with final decisions based on the results affecting a learner's life and academic path (Maree & Fraser, 2004). For this reason it is crucial that valid inferences are made. Assessment is inextricably linked with teaching and learning and Foundation Phase educators are guided by the Policy on Assessment and Qualifications for Schools in the General Education and Training (GET) Band. A few important points highlighted in this policy (DoE, 2001) reveal that assessment should:

- be authentic, continuous, multi-dimensional, varied and balanced;

- take into consideration the diverse needs of learners and the context. Various assessment strategies should therefore be used;
- be used as an ongoing integral part of the learning and teaching process. This means that assessment should be used to inform and evaluate teaching and learning;
- be accurate, objective, valid, fair, manageable and time-efficient;
- take many forms, gather information from several contexts, and include a range of competencies and uses;
- be free from bias and sensitive to gender, race, cultural background and abilities;
- in the main, be criterion-referenced;
- be transparent so that learners and teachers have a clear understanding of the expectations for any assessment task, and what knowledge, skills, values and attitudes are being assessed.

Teachers are involved in assessing learners through an array of strategies both summatively and formatively. Thus, assessment forms the crux of teaching and learning, as stated in the National Curriculum Statement (NCS) (DoE, 2002b), and should be included in all areas of the learning environment and the planning of lessons. The policy document states that with the help of assessment, educators are able to track whether the desired outcomes have been reached, including the minimum achievement level which learners are supposed to reach in that specific grade, and the achievement levels of the learners in accordance with a specific grade. However, the main purpose of assessment is to enhance learner growth and development and to monitor progress.

The SAMP project contains a Picture Vocabulary Test, which forms part of a larger assessment instrument of the SAMP project, and is administered to Grade 1 learners. This Picture Vocabulary Test forms the basis of this research study as it explores how objects used in one influence the level of construct validity and whether the inferences made are valid. In this research study, a baseline assessment is made at the beginning of the year, and a follow-up or summative assessment at the end of the year.

However, within the South African educational context many issues of language arise that have a notable effect on the development of literacy and its subsequent assessment. It is the desire of the government that home language is taught wherever possible, with special relevance to the Foundation Phase. Reading and writing should take place in the learner's home language. It is seen as a barrier to learning if the learner lacks confidence to express him or herself in the language used for teaching, learning and assessment. This barrier is exacerbated if the teaching, learning and assessment are in the learner's second language rather than the home language. If the learner is being assessed in a second language then, according to policy, he or she must be assessed according to the assessment standards of the First Additional Language (FAL) (DoE, 2002b). Sensitivity must be shown to learners with language barriers and necessary steps should be taken to overcome these barriers, as stated in the RNCS (DoE, 2002c). It is also noted in this document that young learners have varying degrees of attention and that the younger the learner the shorter the attention span. This point is highlighted for its relevance to the development of the original assessment used in this research study. One of the challenges of PIPS was to design an assessment that would be short enough to keep the attention of a young learner but also be reliable and have a high level of validity.

The discussion above gives an enlightened perspective of how literacy and assessment, with their challenges, are developed in the early grades. In the paragraphs that follow, factors are identified that affect the way learners perform in the Picture Vocabulary Test used in this study.

2.3 VISUAL LITERACY (VL)

Visual Literacy (VL) is an exceptionally broad and mystifying concept, because unlike the word 'vocabulary', VL is used across numerous disciplines. Each of these disciplines has its own relevant definition of the term VL and in addition, each discipline prescribes different attributes and expectations of it.

VL is referred to variously in the RNCS (DoE, 2002c), whereby the learner is expected to make meaning of and interpret visual texts. The learner has to be able to communicate effectively by making use of different visual modes and must also be able to create, design, discriminate between and interpret visual materials. Furthermore, it is expected that the learner correctly interprets visual images that are combined with text. These aspects are central to the development of VL. In the passages to follow, the attributes of VL most pertinent to this study will be investigated.

The various disciplines that have explored and make use of VL are, inter alia: Psychology, Perceptual physiology, Media studies, Biochemistry, Art History, Sociology, Cultural studies and Educational Technology. Research into the importance of VL in the education of Biochemists, carried out by Schonborn and Anderson (2008; 2006) and Schonborn, Anderson and Grayson (2002), found that it had been ignored for too long when considering that external representations of physical and molecular structures can often be confusing. They further found that VL is not automatically acquired but had to be explicitly taught to students. They concluded that VL is seen as being interdisciplinary and forms part of the modern world. In the Arts discipline, VL is explored to learn how to enable children to become more aware of and how to interpret art (Yenawine, 2003).

Although Biochemistry and Art can be said to be at opposite poles, both these fields see the relevance of the role VL plays in the way images are understood and interpreted. The images used in Biochemistry are highly technical and complicated, made up of molecular and cellular structures. The images need to be correctly identified in order to make meaning of what is seen by the Biochemists, otherwise incorrect diagnoses can be made. On the other hand, it is equally important for children to learn how to interpret art and articulate this in words, so in turn be able to interpret other images and improve their knowledge and language (Yenawine, 2003).

There are as many definitions of VL as there are disciplines using the term. To find a single definition for VL has therefore been problematic and elusive, as noted by Williams (2007), McDougall (2004), Sims, O'Leary, Cook and Butland (2002) and Cassidy and Knowlton (1983). For Raney (1999, p. 1), the term is "like words or like

holy relics?", because a proper definition across disciplines is elusive and the term could be seen as only belonging to the past with no single definition found today. Table 2.1 lists the numerous definitions found in the literature explored. The definitions most applicable to this study are highlighted in green in the table:

Table 3.2: Definitions of Visual Literacy

Definitions of Visual Literacy	Author
A group of vision competencies a person develops by seeing and simultaneously incorporating other sensory experiences	Debes
VL can be defined as a group of skills which enable an individual to understand and use visuals for intentionally communicating with others	Ausburn and Ausburn
VL is the ability to understand (read) and use (write) images and to think and learn in terms of images, i.e. to think visually	Hortin
Visual literacy is what is seen with the eye and what is 'seen' with the mind	Bamford
Visual literacy itself is defined as the active reconstruction of past experiences with incoming visual information to obtain meaning	Sinatra

VL was first identified in 1946 by Dale (as cited in Arbuckle, 2004) as one of the major modes of literacy, with the others being print and audio, but the actual term 'Visual Literacy' was first defined by Debes in the late 1960's, as a group of "visual competencies" a person develops by seeing and simultaneously incorporating other sensory experiences. When these competencies are developed, a visually literate person is able to identify objects and symbols within their environment (McDougall, 2004, p. 56). However, this definition was found to be deficient by Arbuckle (2004),

Bamford (2003) and Avgerinou and Ericson (1997), who felt it was too broad and diffuse for addressing research problems.

Ausburn and Ausburn (cited in Avgerinou & Ericson, 1997, p.281) suggest that: "VL can be defined as a group of skills which enable an individual to understand and use visuals for intentionally communicating with others", and as in this study, it is expected that the learner "will be able to understand and identify visuals (objects) to intentionally communicate effectively the answers required in a Picture Vocabulary Test".

A definition by Hortin (cited in Avgerinou & Ericson, 1997, p.281), slightly more appropriate for this research study, is: "the ability to understand (read) and use (write) images and to think and learn in terms of images, i.e. to think visually". This definition is adapted for the study, namely VL as the ability to understand (identify) and use (name) objects in images and/or pictures, and to think and learn in terms of them. This amounts to thinking visually. The aim of the Picture Vocabulary Test, thus, is for the learner to understand and identify the images or pictures and the objects used in it.

Another definition of VL appropriate to the Picture Vocabulary Test is provided by Bamford (2003, p. 1), as: "what is seen with the eye and what is 'seen' with the mind." Bamford further argues that a visually literate person can "…discriminate and make sense of visual objects and image". Linking this with the expectations of the Picture Vocabulary Test would mean that the learner sees (seen with the eye) objects used in the pictures of the test and correctly identify the vocabulary associated with the picture. The learner then has the ability to recall and identify the objects in these pictures ('seen with the mind'). However, this is based on an assumption that the learner has had previous exposure to the objects used in the Picture Vocabulary Test and can then later recall, identify and name them.

A definition by Sinatra (as cited in Avgerinou & Ericson, 1997, p. 282) of VL as "the active reconstruction of past experiences with incoming visual information to obtain meaning" is the most applicable to this study, as it is expected that the learners participating in the Picture Vocabulary Test are able to combine previous events in

their lives with what they are seeing and make sense of it on a cognitive level The learner should thus be able to find personal significance in an object, in this study identify and make meaning of, for example, a carrot, butterfly or cash, from visual information to which they have previously been exposed. Although Sinatra has not stipulated or explained what is meant by 'visual information', it is here taken to refer to objects, items or situations that have contributed to a learner's VL. The definition of VL most suited for this study therefore would be: the ability to accurately identify objects and pictures seen in the past when they reoccur in the present in a similar or different manner.

The VL competency of a learner can be identified by a number of factors mentioned in the next section.

2.3.1 Identifying Factors of Visual Literacy Competency

The characteristics of VL identified by Johnson (in Arbuckle, 2004, p. 448) are the ability to:

- see the difference between light and dark
- recognise difference in brightness
- distinguish colour from greys
- recognise differences and similarities in colour
- see distance, height and depth
- see movement
- understand simple body language
- recognise a whole shape when parts are covered or hidden
- recognise groups of objects that are commonly seen together (e.g. knife, fork and spoon)
- sequence objects that are not commonly seen together into some kind of meaning
- see similarities and differences in shapes

The above can certainly provide guidance to the competency of a person's VL level but cannot be considered as qualifying factors. They cover a very broad area and no distinction is made between, for example, gender, age groups, physical disabilities or culture. For example, if a person was colour-blind, and depending on the degree of colour blindness, he or she might not be able to distinguish colour from grey nor recognise differences or similarities in colour. It may also be significant in terms of gender that one in twelve males have a degree of colour-blindness, but that it is rare in females (Ridgen, 1999). This does not necessarily mean that colour-blind males are visually illiterate or incompetent, merely they may not all see the same colours. This example is cited as evidence that gender may be relevant in examining the topic, amongst other factors such as age, visual competence, culture, and socio-economic status, all of which have to be considered when gauging a person's competence in VL. The aspects required for this research study are described in greater detail.

2.3.2 Developing Visual Literacy

Burton (2004, p. 3) asserts that there are three factors that describe the process of VL:

1. **Visual Perception,** the way information and objects from the physical world are seen and taken in for meaning to be derived. It could also be the way information and objects from the environment of a person is internalised to make a mental picture of what was seen or experienced.

2. **Visual Imagery,** the way that information and objects or events are processed internally and then recreated "in the mind's eye". This information consists of objects or events recalled from memory by means of past visual experiences of these objects.

3. **Visual Communication,** the way of conveying and receiving visual information or messages using purely visual means, with no use of text.

To these three factors, can be added another, which although not mentioned in the literature referred to in this study is important to include:

4. **Visual Ability,** the way objects and pictures can be represented in different contexts and ways, and yet still be identified and made meaning of by the person viewing them.

A diagrammatic representation of the four factors involved in the process of developing VL. When visual perception, visual imagery, visual communication and visual ability are all equally and substantially developed, a concrete foundation is laid for VL.

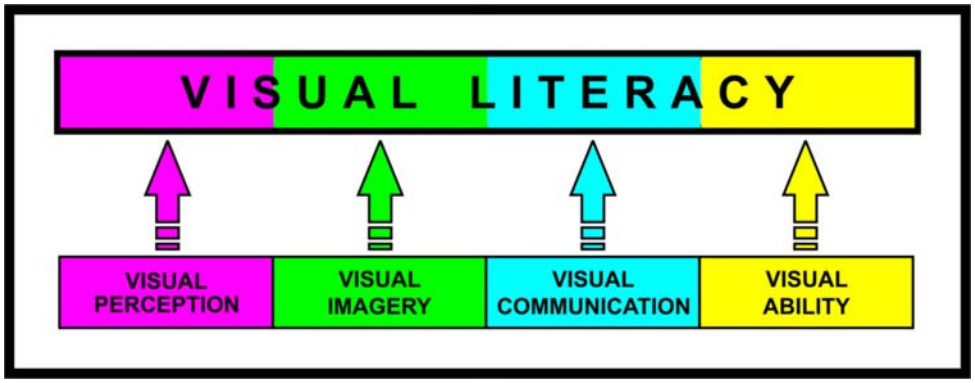

Figure 3.1: Foundation of Visual Literacy

If these four factors are adequately developed, the learners participating in the Picture Vocabulary Test will be able to accurately identify the objects shown to them. If the VL of the learners overlaps with what is presented in the Picture Vocabulary Test the inferences made will be well-founded and the test will have a high level of validity. Objects that are presented in the world around the learners have to be made meaning of, above all to be seen (visual perception). These objects then have to be processed and stored in the learner's mind to be recalled later 'in the mind's eye' (visual imagery). Additionally, objects can be used to communicate without the use of text; an example would be a picture of a hamburger on a map that represents a restaurant (visual communication). Continuing with the example of a map, a number of different objects can be used together to represent a road, a bridge, play parks, and hotels. These various objects are grouped together to make a map, but they can

also be used to depict a story in a storybook. In other words, the same objects are presented in different ways for different reasons, but the learner is still able to understand and make meaning of the objects presented in diverse contexts.

Considering the above factors, an ideal can be reached of what can be expected of learners who participate in a Picture Vocabulary Test. A visually literate learner, thus

- has the ability to see and identify objects in his or her environment
- is able to make meaning of unfamiliar objects seen
- is able to memorise objects seen within the environment. Once meaning has been made of the objects seen, these objects are internalised and stored in memory
- can recall from memory objects that have been seen previously
- can identify the object if it is seen again
- can identify previously seen objects in various contexts
- can name previously seen objects in various contexts
- is able to continually develop his or her VL through exposure to new unfamiliar objects
- has the ability to store and recall new objects that have been seen
- has his or her own unique level of VL, similar to someone having their own unique degree of vocabulary

Some factors tend to be more developed than others, and within time and explicit teaching a learner's VL can be increased.

2.3.3 Furthering the Development of Visual Literacy

In order to overcome the difference in the VL levels of learners, Linney (cited in Arbuckle's study, 2004, p. 453) suggests that three methods be incorporated into the teaching of literacy:

- **Making pictures that people understand.** This is a design-centred response, in which the designer tries to adapt his or her pictures more closely to the type of level of VL in the community.

- **Improving visual literacy skills.** This is a people-centred response. If people get the opportunity to learn pictorial conventions with which they were previously unfamiliar, they will become better able to understand whatever pictures they do get to see.

- **Increasing exposure.** The more pictures people see, the better they become at understanding them, helping them learn how to make their own pictures and using existing visual aids more actively and more often.

Although Arbuckle's study was based on Adult Basic Education and Training (ABET) in VL, these methods can also be adapted and used with the teaching of literacy to Foundation Phase learners as required by the RNCS (2002c). These adapted methods are discussed:

- **Making pictures that children understand.** This is a design-centred response, in which the designer tries to adapt his or her pictures more closely to the type of level of VL of the learner participating in the Picture Vocabulary Test. This is done by creating pictures that specifically relate to young learners, pictures that will stimulate their curiosity, grab their attention and be age-related.

- **Improving visual literacy skills.** This is a learner-centred response. If the learners get the opportunity to learn about objects and pictures with which they were previously unfamiliar, they will be better able to understand whatever pictures and objects they do get to see. This is achieved by incorporating new objects with familiar objects so that the relationship that exists between them can be better understood and to ease identification and grouping. An example would be drawing an unfamiliar vegetable with

vegetables familiar to the learner. The learner would then be able to understand into which group the object fell.

- **Increasing exposure.** The more pictures and objects learners see, the better they become at understanding pictures and identifying objects, resulting in objects being identified more actively and more often. This can be done by having posters with objects belonging to certain categories, or by providing magazines that the learners can page through that follow a certain theme, e.g., crafts, sport, home decoration.

According to Sims et al., (2002) because the number of captured visual images is increasing in an age of technology, successful educational outcomes should be at the forefront, with VL cultivated and taught. VL and visual resources are fundamental for enhanced learning and retention, as proposed by Gardner (2003), the so-called father of Multiple Intelligences (MI).

VL plays a fundamental role in the learners' performance ability when they participate in a Picture Vocabulary Test, and they must have past visual experiences of the various objects used in it and an ability to identify them. They must be able to differentiate, make sense of and identify the objects displayed, although this can only happen if they have had past exposure to them. The problem then arises that such objects must also be applied in such a manner that they are identifiable by all cultures, where possible (Arbuckle, 2004; Burton, 2004; Sims et al., 2002).

The study now turns to ways in which the above-mentioned variables can be controlled in order to increase the validity of the test.

2.4 THE ROLE OF PICTURES IN LITERACY

Pictures have been created for thousands of years, from early cave paintings to contemporary digital images. Pictures can be used to describe events or a concept, send a message or tell a story. A definition by the *Oxford Advanced Learner's Dictionary* (Wehmeier, 2010, p. 1094) of a picture includes painting, drawing, portrait,

illustration, sketch or image. Arbuckle (2004, p. 449) defines the word picture as being "...similar to written words, in that words (written or spoken) in any language are symbols for, or descriptions of, other things – objects, events, feelings or concepts – that exist in reality". These two definitions are clearly linked and reinforced by DeLoache (1991, p. 738), that a picture's "…primary function is a representation of something else."

Pictures may represent objects, events, feelings or concepts that take place in the physical world, and may be descriptive or symbolic, realistic or abstract. They may also be regarded as metaphors for life experiences. Rowntree (1990, p. 121) sheds more light by pointing out that pictures can be used to express something words cannot. A Grade One child can draw a picture of his or her home with smoke coming out of the chimney, or a teenager can draw a picture of his or her home and have the figure 'Death' lurking in the background. Both of these pictures could reflect something that seems to worry the child or teenager, as stated by Di Leo (1983). Different abilities are required to create pictures which can be used to decorate, amuse, express, persuade, illustrate, describe, explain, simplify and quantify (Rowntree, 1990), and to interpret them. Some people instinctively tend to decorate, amuse, express, persuade, illustrate, describe, explain, simplify and quantify that which is most on their mind, but not every person has the same ability.

Some of this variation in ability may be attributable to the environment, as Hawthorne and Tomlinson (1997, p. 301) wrote: "Pictures are most effective when their contents are familiar, realistic and depict a single activity". They can also be used to greatly enhance learning by adding text, observed by Fang (in Carney & Levin, 2002, p. 6) as offering motivation to readers, promoting creativity, servings as mental scaffolding, fostering aesthetic appreciation and thus promoting children's language and literacy. Text combined with pictures is known as 'multi-literacy' or 'multi modal'.

Carney and Levin (2002, p. 6) explain in detail the various forms of pictures that exist, such as *representational*, that depict the text content, *organisational*, which provide a structural framework, *interpretational*, which are seen as clarifiers of scientifically and technically complicated concepts, and *transformational* (*mnemonic*), that assist memory and learning. The aim of the Picture Vocabulary Test is to use

pictures that have objects in them that are familiar to the learners and to which they can relate. However, the problem remains, for pictures to be familiar to learners and for them to relate to them, they first need to be learnt. This means, for researchers such as Osgood, Suci and Tannenbaum (cited in Cassidy & Knowlton, 1983), that the pictures are culturally and socially mediated. When learning about a new object or picture, sensory learning takes place (Whelan, 2004; Avgerinou & Ericson, 1997), and when pictures are used in an appropriate manner, learning can be enhanced, as argued by Carney and Levin (2002).

Carney and Levin (2002), in reviewing studies on pictures-in-text, found that research in the 1970's and 1980's revealed that carefully designed illustrations enhanced learning. These findings were strongly supported by research in the 1990's (Peeck, 1993). More recent research has revealed that various forms of pictures are found in texts that result in robust memory effects (Marley, Levin & Glenberg, 2010). The four forms of pictures named above affect learning, with learners performing at much higher cognitive orders, leading to the conclusion that if a person is picture literate they are able to understand and interpret information presented in a picture (Stokes, 2001). As a result their academic performance will benefit from pictures used in text.

In arguing this point further, Cassidy and Knowlton (1983) attempted to research a child being kept from any pictures from birth, the child being their own child. Despite encountering difficulties in keeping pictures away from the child, especially when they were travelling on roads fringed by billboards and advertisements. They nevertheless were able to draw some conclusions from their efforts. At 19 months of age, the child saw a horse on a television screen and, full of enthusiasm, called it a dog (they had a dog as a pet). When this incident occurred, the research was ended and two external judges were called in to ensure that the study was trustworthy, to check for discrepancies and to test the child. The child was then shown photographs and drawings of a dog by the judges, and was able to identify the dog in both. However, because the child still confused the horse with a dog, steps had to be taken to teach the child what a horse looked like. The study illustrates that if a person is not taught what a specific object is they may name it incorrectly, in this case according to one that has certain visual characteristics in common. There is no innate knowledge of objects with which people are born. The relevance of this conclusion to the Picture

Vocabulary Test is that in order for learners to correctly identify objects they first have to be taught what those objects are.

Thus, when developing a Picture Vocabulary Test, the factors mentioned above have to be taken into account. The learner must be familiar with the way the objects are represented in the picture. The manner in which the objects are depicted in the picture may be more familiar to some learners than to others, for reasons discussed throughout this chapter. Just as each word and sentence conjures up its own meaning for each person, so the same can be said about pictures. Each person has his or her own unique way of interpreting a picture, seeing it in their own way. The person's way of seeing is influenced by previous experiences, presumptions, assumptions, expectations and beliefs. The same happens when a picture or image is recalled from memory, with all these factors influencing how it is recalled. Thus, a picture can be seen as a story, but each person reading that picture has their own style of reading and interpreting the story represented by the picture (Moore & Dwyer, 1994; Weber & Mitchell, 1996).

Understanding and interpreting a picture correctly is a cognitive ability that needs to be developed, and in certain cases, with particular groups, this may require greater attention. In many instances, it is taken for granted that the learners are familiar with the picture and the objects represented (Arbuckle, 2004, p. 445), however, the way a picture is created plays an important role in the performance of learners taking part in a Picture Vocabulary Test. Even though the manner in which the objects in a picture are presented to the learner may be new, the learner must be able to interpret the picture and identify the objects used in it. If the learner can correctly interpret the picture and is familiar with the objects used, a Picture Vocabulary Test will have a high level of validity. Just as pictures and objects need to be learnt by a person – as mentioned above - so too do language and culture.

2.5 THE ROLE OF LANGUAGE AND CULTURE IN A PICTURE VOCABULARY TEST

Language and culture are often seen as individual entities but both influence each other making them inseparable.

2.5.1 The Role of Language in a Picture Vocabulary Test

The elements found in language are sounds, letters, structures, syntax, vocabulary and the way they are put together (Crawford-Lange & Lange, 1987, p. 264). Within the educational sphere, language has become a multifaceted phenomenon that challenges any educator when knowledge has to be put across to diverse learners. Research has shifted from studying children from one specific language group to those from diverse linguistic societies. As well as studying children learning more than one language at a time, studies have even reported that judgements are passed on children with certain dialects (Garcia, 1993).

From 20th century language has been studied intensely by various scientists around the world. Language is what defines humankind and places it above all other species. New facts have been discovered about language development in infants. In the article of (Kuhl, Tsao, Liu, Zhang & de Boer, 2001, p. 145) research has shown that at birth infants prefer the language spoken by their mother to any other language. The baby learns speech patterns while *in utero.* Taking a look at the early development of language in infants interesting findings was documented. Cultural anthropologists have noted that across many world cultures a certain speaking style has been adopted when infants and young children are addressed. This speaking style has amusingly been given the name ‘motherese’ or ‘parentese’ (Kuhl et al, 2001, p. 154). A distinctive acoustic signature is found in ‘motherese’ being high pitched with a slow tempo. This form of speech is used by mothers, fathers, grandparents and caretakers. Adults are unaware of the changes they make when talking to infants and young children and feel embarrassed when questioned about it. Interesting to note though was that ‘motherese’ helped infants learn the language

because of the fact that the speech was modified at a phonetic level. People also increase their pitch when talking to pets, similar to 'motherese' but they do not extend their vowels. The reason for this being that the person realizes that the pet will not be able to talk back while an infant will be able to later. This information above evidently demonstrates that language and culture are closely related and are worldwide perceived as attributes that going hand in hand where humankind is involved.

From the moment a baby is born she or he is not only exposed to language but culture as well. Both language and culture are learnt as the baby develops. An example of this would be a small girl that sees her mother carrying a baby on her back and singing lullabies. The small girl will listen to the lullaby's words and watch the behaviour; she then carries her doll on her back and sings the lullabies to the best of her ability trying to imitate her mother. A further example would be children born within a Jewish culture who will learn about the customs of that culture. These customs will become second nature to them. Thereby not only learning Hebrew, but also how the Sabbath is kept and going to the synagogue aside from other traditional values (Jacobs & Giarelli, 2001). The acquisition of language and culture occurs simultaneously, resulting in language becoming a proxy to culture. This then leads to the next point.

Educators in the foreign languages have come to believe that language and culture are inseparable (Crawford-Lange & Lange, 1987). Teachers and children construct knowledge together by "… drawing on and mingling their varied language and cultural resources and experiences" (Cochran-Smith, 1995, p. 499). Adding to this point, the Sapir-Whorf linguistic relativity hypothesis is based on the theme that culture by means of language influences the way people think. According to this hypothesis there are:" … certain properties of a given language that affect the way people perceive and remember" (Ji, Zhang & Nisbett, 2004, p. 58). The intertwining of culture and language can be used to enhance learning by their influence on values and perception (Shanahan, 1997). Therefore, language is not seen as being interchangeable but as complimentary in the modern world. The reason for this, according to Hobsbawm (1996), is the existence of multinational societies.

Children learn language by imitation and observation, noticing how sentences are expressed by others and how these expressions change from one situation to another. Language is also developed along the lines of social identity, social roles and conversational activities (Schieffelin & Ochs, 1986), such as the way they interact and play with other children in their neighbourhood. A further important aspect of language development is through reading books written in the language of the child (Pretorius, 2009, p. 56). When children start to learn a second language they make use of rote memorisation and imitation. If a child does not frequently interact with persons speaking the language he or she is trying to learn, the transfer of the language will be less successful (Garcia, 1993, p. 63).

As in this study, learners from three different languages participated in the Picture Vocabulary Test (see Chapter 1). These three language groups also have their own related culture and often their schooling took place in their second or even third language. The reason for this is that in RSA there is a shortage of teachers in all 11 official languages, particularly African languages, which Sibula (2007) argues should be developed because they are being spoken less. Language links people to the core values of their heritage, family and community (Mills, 2001, p. 398), and the relationship between language and culture has been documented in research from the early 1970's. Tseng (2002, p. 11) states that culture has a direct relationship to language and is key to learning a language. Research done by Charteris-Black (2002) showed that certain linguistic terms were conceptualised according to the subjects' culture. Manifesting that culture influences how language is understood and interpreted.

In a study by Mills (2001) on bilingualism, which explored children who were born in Britain but whose family's origin was Pakistan; it was found that although they spoke two different languages, each with its own culture, they followed the culture of the language from which their heritage originated. Language is seen as being filled with cultural contexts, and influences the way words are understood. A young Pakistan boy, commenting on him speaking various languages namely English, Punjabi and Urdu noted that in Punjabi and Urdu one word can have ten meanings, and so to correctly understand what is being said numerous factors have to be taken into account. He said that a person must look at the entire sentence, the circumstances

and the person speaking the sentence to understand what is being said. To him, English was just a language (Mills, 2001, p. 396), though a counter-argument would be that these factors are the basics of communication and understanding for anyone, and that there are words in English that can have several different meanings that depend on the context in which they are spoken. For Carter and McCarthy (2004, p. 81) however, language can become utilitarian and transactional, and that this is the case with English, which "has indeed become a utilitarian object for its world-wide users…"

Conducting research into the way culture influences categorization, Ji, Zhang and Nisbett (2004) pointed out that when cross-cultural assessment takes place, most often the original instrument is developed in English. The English instrument is then translated into the other native languages of the participants. The differences that occur between the different languages are then attributed to their differing cultural backgrounds. They concluded that cultural background does indeed affect reasoning and that language affects thinking. This informs the way pictures are affected by language and culture.

Although it is often taken for granted that pictures are seen as being independent of language and culture, despite the message they are communicating (Hoffman, 2000), cultural backgrounds and languages spoken, among other factors, influence the way pictures and objects are seen and identified by people. The purpose of pictures is to intentionally use signs that have been culturally acquired within culturally established patterns to communicate a message (Debes & Williams, 1974). For this research study, the above quote is adapted to: "…the intentional use of culturally acquired *objects* in culturally established patterns for the purpose of *culturally fair* assessment". The word 'sign' may be understood to be some form of warning or information given, as well as being a key word in the study of semiotics (not the focus of this study), and was consequently replaced by the word 'object' for the purpose of this study.

In the next section, culture and its influence on the level of validity will be discussed.

2.5.2 The Role of Culture in a Picture Vocabulary Test

De Witt and Booysen (1995, p. 36) provide numerous definitions of culture, one of these stating simplistically that culture is: "… a system of meaning shared by a population of people and transmitted to future generations". To expand on this definition, De Witt and Booysen (1995, p. 36) identify two types of culture, namely a material culture which embraces objects, technology and art, and an immaterial culture, which has to do with language, knowledge, skills, values, religion and customs. In this study, the focus will be on the latter.

These above-mentioned definitions of culture oversimplify the concept, and as Webb and Read (2000, p. 1) argue, culture is not genetically predisposed from one generation to the next, but rather is an: "…acquired knowledge, learned patterns of behaviour, attitudes, values, expectations, rituals and rules, a sense of identity and of history…". They further advocate that due to different cultural backgrounds, people have different perceived ideas about: "…work, leisure, time, religion, the role of men, women and children in society, sexual practices, food, dress, and so forth". They also point out that differences in culture are portrayed in various ways through dress, music, art and appearance, and that one of the most important instruments of culture is language.

Culture and language influence every aspect of society at every level, such as home, school, education and work, and are an integral part of each human, being a heritage carried with them, be it consciously or subconsciously. As a result, culture and language play a fundamental role in the educational development of the learner (Webb & Read, 2000). Keeping this in mind, it can be seen that an immense challenge exists in developing a Picture Vocabulary Test to assess learners. Each learner has built up a referencing framework and perception of the world based on a cultural background. Consequently, each learner's acquired knowledge cannot be judged as being insufficient or of a lower standard because of exposure or lack of exposure within the cultural background of his or her language. Thus, if an effective tool for the prediction of the future academic performance of learners is to be

developed, learners should be accommodated in completing a Picture Vocabulary Test that will validate their cultural perceptions and language preferences.

The acknowledgement of different cultures and languages is essential within the educational sphere in order for education as well as educational research to advance. There exists a need to be context-sensitive within education, including assessment, as culture forms an integral part of each human. It is equally important for other countries to be made aware of the cultural differences that exist within South Africa, and how these cultures affect education, assessment and the validity of assessment (Crossley, 2000). South Africa is known as the 'Rainbow Nation', a term first used by Archbishop Desmond Tutu and later by Presidents Nelson Mandela and Thabo Mbeki, to encapsulate both the multi-cultural make-up of South Africa and its coherence across a unified spectrum (the 'rainbow'. It has subsequently been used internationally when referring to the country (Habib, 1996)).

Crossley (2000, p. 319) explains that: "Globalisation has infused the ever-present need to learn about each other with an urgency and emphasis like no other in history". But there are critics who argue that, contrary to belief, globalisation has created its own unique culture and that cultural groups are on the verge of extinction within 'the global village'. Nevertheless, it is with this point in mind that Crossley (2000, p. 322) emphasises the need for consideration towards different cultures, particularly as defenders are becoming more adamant about their being uniquely identified and not subsumed by an analogous global culture.

The cultural background of a learner influences the way he or she perceives a picture and is able to identify objects. When a picture is created with a specific culture in mind the objects could either be familiar or strange to a learner from another culture. This depends on whether the objects are found within the learner's cultural setting. The learner's ability to identify an object presented in a picture correctly is therefore affected, which means that when a Picture Vocabulary Test is designed, pictures and the objects used in them need to be thoroughly thought through when considering their use. Learners exposed to pictures that are not within their cultural sphere may experience a certain level of difficulty in interpreting them and identifying the objects (Barnard, 1988; Cassidy & Knowlton 1983; Debes & Williams, 1974).

An example of this is provided by Cassidy and Knowlton (1983), in which a certain culture in a non-industrialised environment could not identify themselves in a photograph, until they were taught about the method of representation of photography. This specific cultural group had never been exposed to photographs or cameras, and as such may be compared to the Khoisan people of Southern Africa who lived off the land, as either hunter or herders. Their culture, prior to Western colonisation, enabled them to survive severe ecological constraints. Depending on natural sources for food and water, they did not come into contact with mass-produced goods until they were exposed to Western culture (Barnard, 1988).

In order for a Picture Vocabulary Test to have a high level of validity, the person designing the test and the person taking it must be of the same culture or be familiar with the culture of the people taking part in the assessment. If a distinct difference exists between the culture of the person designing the assessment and that of the person taking part in the assessment the validity of the test will be in jeopardy, as depicted in Figure 2.2:

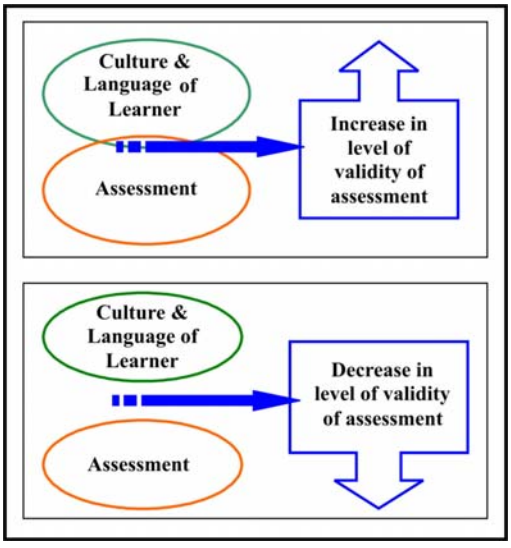

Figure 3.2: Culture & language & assessment influence

A simple hypothetical example intended to illustrate this point would be if a South African teacher of English were to set up a test for Mexican children learning English, in which the question were asked: “What do you wear on your head on a hot sunny

day?" Allowing for the level of language learnt and possible need for translation, the teacher might expect the answer to be 'a hat' or 'a cap', but the Mexican child would likely answer 'a sombrero', a much wider piece of headwear than generally worn by South Africans. Neither answer would be considered incorrect, because a sombrero is, like as hat or cap, generically a piece of headwear. However, because the teacher and learner come from different cultures, with certain objects specific to it, there would be a variation in identifying and naming similar objects.

Taking the above-mentioned into consideration, one can deduce that each culture has its own referencing framework with relation to objects and pictures, which in turn is expressed in language. Each culture has had an exposure to the world seen uniquely through its eyes. What might be common knowledge to one culture could be foreign to another. This places each culture on differing academic pedestals, although it does not imply that some cultures are academically inferior to others, but rather that technologically rich cultures and poor cultures do, to a certain degree, perform differently academically. Technologically rich cultures are surrounded by technology and rely on technology for their daily existence while technologically poor cultures focus more on their natural surroundings. Learners from technologically poor cultures have had a different exposure to the world than their counterparts.

Sternberg (cited in Papalia, Olds & Feldman, 2002, p. 323) asserts that there is a tendency to include questions in assessments that use vocabulary or ask for information and skills which are more familiar or meaningful to certain cultural groups than to others, placing certain learners at a disadvantage. Research reported by Papalia, Olds & Feldman (2002) calculated that Latino and Native American children had lower IQ scores due to language difficulties, performing better in performance tasks than verbal tasks.

Cultural bias also plays a role in the performance of learners when it is presented in assessments, particularly in a Picture Vocabulary Test. Assessments are seen to be culturally biased when they only accommodate a specific culture but are administered to multiple cultures. If the objects used in a Picture Vocabulary Test are selected to suit one specific culture, the test will not have a high level of validity if

administered to other cultures. Comparisons across cultures are becoming increasingly popular in assessments (van der Vijver & Poortinga, 1997).

The SAMP Picture Vocabulary Test has already been adjusted after recommendations made by a panel of experts. This was done in order for the pictures to be more appropriate for a South African context, based on objects found within South Africa. However, the possibility exists that there still could be cultural bias present in the test which could have an effect on learners from various language groups and their ability to identify objects presented in the test. The research done in this research study will indicate whether further adjustments need to be made to make the Picture Vocabulary Test more appropriate and valid for each language group.

Points from the above literature are now considered in terms of their applicability to the development of a conceptual framework appropriate to this study.

2.6 CONCEPTUAL FRAMEWORK

Relevant to this study is Pettersson's (1998) communication model, also cited in Kirsten (2004), which states that in order for effective communication to take place there must be common experiences between the communicating parties: *"…both "sender/encoder" and "receiver/decoder" function within their own "field of experience""* (Kirsten, 2004, p. 19). In the model adapted from Pettersson, the statement changes to say: In order for a Picture Vocabulary Test to have a high level of validity there must be commonalities between the learners' *visual literacy*, *language* and *culture* and the items used in the test. These three factors influence the learners' performance in a Picture Vocabulary Test as well as the validity level of the Picture Vocabulary Test. If any of these three factors do not relate to the items used in a Picture Vocabulary Test then the validity level is in serious jeopardy.

Figure 2.3 is an adapted version of Pettersson's communication model that reflects the factors that influence the validity level of the Picture Vocabulary Test:

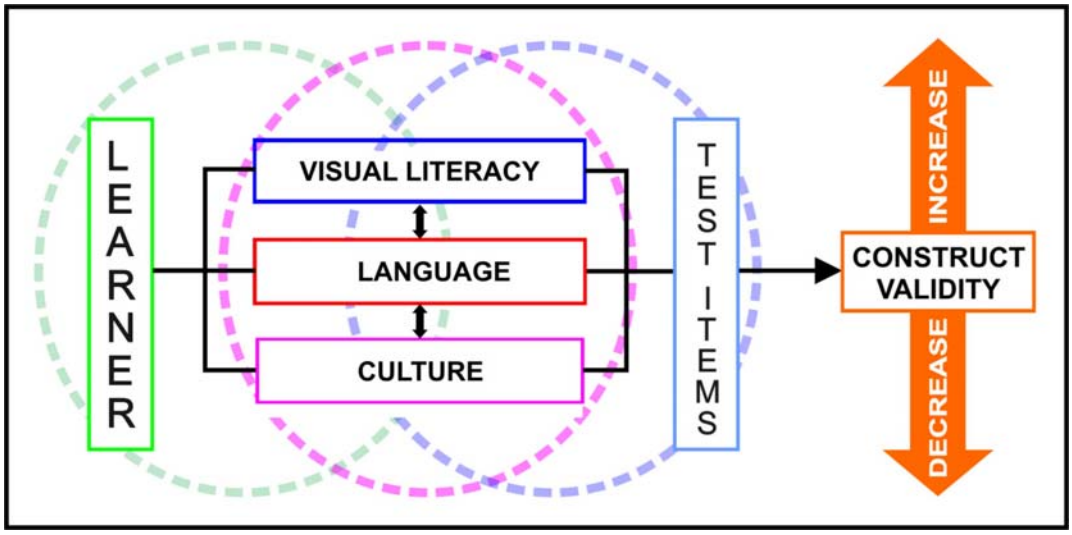

Figure 3.3: Conceptual Framework

Interpretation of Conceptual Framework

The above diagram of the Conceptual Framework can be interpreted as follows: If a clear and definitive overlap can be found between the VL of the learner and the objects in the test, the culture of the learner and the objects in the test, and the language of the learner and the objects in the test, the test will have a high degree of validity.

For a Picture Vocabulary Test to have a high level of validity, it must be designed in such a manner that the learners' 'field of experience' is taken into consideration. In this case, the 'field of experience' of the learners is their level of VL, the culture to which they belong and the language they speak. When considering the design of a Picture Vocabulary Test there must be an overlap of the learner's "field of experience" and the objects used in the test. Pettersson points out various factors that influence the receiver's perception, namely time and stage of development, cultural status and social status (Pettersson, 1998).

The first factor that could influence the level of validity is the learner's VL level. The higher the VL of the learner the greater the chance of the learner identifying the objects presented in the test, as argued above. The learner must have had past experiences with the objects portrayed in the test to be able to successfully recall these objects and identify them. But, if the learners have a low level of VL they will

have difficulty in identifying the objects presented in the test. It is crucial that the VL level of the learner is matched with the objects used in the Picture Vocabulary Test.

The second factor is language. Each language group has its own perceptions and understanding of the surrounding world. Language influences the learners' ability to relate and identify objects because of cultural influences. Since language and culture are intertwined and each language group has its own unique traits, consideration must be given to objects presented in a Picture Vocabulary Test. If these objects do not perform at equal levels of difficulty across the different language groups then the level of validity is threatened.

The third and final factor is the culture of the learner. Cultural influences lead the learner towards a certain view of the world; this influences how pictures are seen and which objects are learnt. Each culture has its own "field of experience" and therefore common ground needs to be identified between the culture of the learner and the objects used in a Picture Vocabulary Test. If the objects used in a test are designed for one culture but the test is administered to other cultures as well, the validity level of the test will drop dramatically. If the objects used in the test correlate with the learner's culture the validity level will be high.

The Picture Vocabulary Test will be successful in incorporating a high level of construct validity and having sound inferences in place. This study aims to provide suggestions as to how to make this possible.

2.7 CONCLUSION

The aim of this study is to provide suggestions on how to increase the level of construct validity for the Picture Vocabulary Test. Three major role players were identified that could have an impact on the level of construct validity. The VL, culture and socio-economic status of a learner have the ability to influence his or her performance in the test. If there is no overlap between these three factors, the objects used in the test and the learner then the construct validity level will be at

stake. The conceptual framework was designed according to the relationship between these aspects.

In this chapter the background to South African education and related policies were given. The three prominent factors that influence construct validity were identified and discussed. The first factor was Visual Literacy if it is not adequately developed the learner will experience difficulty in identifying and relating to objects presented in a Picture Vocabulary Test. The second factor, language, is present in a child's life from the time she or he is formed in the mother's womb. Language creates an understanding of the surrounding world and how it functions. Additionally language influences how objects are perceived and conceptualised. Language forms an integral part of culture, which is the third factor that was identified. Culture influences what a learner is exposed to and what objects are found in his or her surroundings. Language and culture both influence the learners' ability to identify objects in a Picture Vocabulary Test. Finally a conceptual framework was created to depict how all the aspects fit together and influence each other. With the conceptual framework it can be shown how validity can be influenced and what aspects have to be given attention to, to increase the construct validity level. A definite overlap must be created between the language, culture and Visual Literacy of the learner and the objects used in the assessment.