

Exploring In-service Teachers' Knowledge of Teaching Literacy Using Braille to Grade R Visually Impaired Learners.

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Abstract

Teaching Literacy as a Learning Area is a compulsory and one of the most complex learning areas that every Grade R teacher should execute within the Foundation Phase years of schooling. This execution is regarded as complex and demanding when teaching sighted learners; however, it becomes even more complex if the teacher has to teach Literacy to visually impaired Grade R learners. In light of this complexity, researchers have endeavoured to explore the technological, pedagogical and content knowledge that teachers should possess for the effective teaching of Literacy in Foundation Phase classrooms. Efforts have been made to explore and illuminate the use of technological tools such Braille in order to understand their requirements in terms of content knowledge, pedagogical knowledge and pedagogical content strategies. It was in this context that this study explored in-service teachers' knowledge of using Braille and skills to teach Literacy to visually impaired Grade R learners. Understanding the different kinds of knowledge these teachers had was essential for comprehending how they integrated different teacher 'knowledges' in teaching literacy skills to Grade R learners who are visually impaired. It was overtly clear that such complex situations call for specialised teacher knowledge as well as their commitment to alleviate illiteracy among learners who are visually impaired. The study was conducted in a school in Maseru, Lesotho and employed a qualitative case study approach. Three in-service teachers teaching Grade R learners who were visually impaired were purposively sampled. An interpretive paradigm was adopted for this study in order to understand how the participants interpreted their world and their encounters. Data were generated through semi-structured interviews and structured classroom observations during the teaching of literacy. Document analysis was also conducted in order to understand how the participants' daily work plans, lesson plans, assessment activities and recordings were planned and structured. The findings revealed that some teachers exhibited good knowledge of technology, although they somehow failed to integrate the use of Braille and literacy teaching. The participants seemed to teach Braille as a 'standalone' subject, whereas it is supposed to be integrated with other subjects as well as with literacy teaching. This study can be replicated in a wider area and in different contexts. The study concluded that in-service teachers showed limited knowledge of some of the domains of teaching literacy to Grade R learners who are visually impaired.

Declaration

I **Matiekase Angelina Kao**, declare that this thesis entitled “**EXPLORING IN-SERVICE TEACHERS’ KNOWLEDGE OF TEACHING LITERACY USING BRAILLE TO GRADE R VISUALLY IMPAIRED LEARNERS**” is my own work and all the sources that have been utilised in this thesis are specified and acknowledged by means of complete references. This thesis has not been submitted previously in part or whole for examination for a degree at any institution.

Signed: _____

Date: _____

Matiekase Angelina Kao

Statement by supervisor:

This thesis is submitted with/without the supervisor’s approval.

Supervisor’ signature: _____

Date: _____

Ms. Patience **Jabulile Mzimela**



8 October 2015

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School of Education
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Dear Ms Kao

Protocol reference number: HSS/0615/015M

Project title: Exploring in-service teachers' knowledge of teaching literacy using braille to grade R visually impaired learners

Full Approval – Expedited Application

In response to your application received on 1 June 2015, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol have been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

.....
Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

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cc. Academic Leader: Professor P Morojele
cc. School Administrator: MsT Khumalo

Humanities & Social Sciences Research Ethics Committee

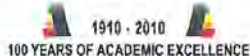
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Dedication

Dedicated with deep gratitude to my late father and friend **ntate Maphetela Julius Kao** and my mother **'m'e Mamphing Clodia Kao** who instilled to all their children that there is no life without education. I am the person I am today because of your unconditional love, good advice and strong personalities.

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Acronyms

Bl	Blind
Brl	Braille
CK	Content Knowledge
HI	Hearing Impairment
ICEB	International Council on English Braille
IDEA	Individuals with Disabilities Education Act
IEP	Individualised Educational Plan
K	Knowledge
LCE	Lesotho College of Education
LD	Learning Disability
LEA	Language Experience Approach
LSEN	Learners with Special Educational Needs
MDT	Multidisciplinary team
MoET	Ministry of Education and Training
MR	Mental Retardation
NGOs	Non-Governmental Organisations
NSW	New South Wales
NUL	National University of Lesotho
O & M	Orientation & Mobility
P	People

PCK	Pedagogical Content Knowledge
PD	Physical Disability
PK	Pedagogical Knowledge
PLSE	Primary Leaving School Examination
SEB	Standard English Braille
SEN	Special Educational Needs
TCK	Technological Content Knowledge
TPACK	Technological Pedagogical and Content Knowledge
TP	Technology knowledge
TPK	Technological pedagogical knowledge
TVIs	Teachers of visually impaired
UEB	Unified English Braille
VI	Visual Impairment
ZPD	Zone of Proximal Development

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Chapter One

Background of and Introduction to the Study

1. Introduction

This chapter presents a discussion of the background of the study. It is partitioned into five sections, namely 1) literacy, 2) background history of Braille, 3) special education history in Lesotho, 4) geographical features of Lesotho and 5) Lesotho's educational system. It further discusses the location where the study was undertaken, the statement of the problem, and the purpose and rationale of the study. The study objectives and the research questions that guided my study are also presented in this chapter, and the paradigm and approach that underpinned my study are discussed. The three data generation tools that were used to generate empirical data for this study are also discussed. Furthermore, the theoretical framework that guided this study is stipulated and discussed briefly. Finally, definitions of the concepts utilised in the study and an overview of all the chapters are presented.

1.1 Background of the Study

This study was based on Grade R in-service teachers' knowledge of using Braille to teach Literacy to visually impaired Grade R learners. There is very limited knowledge in as far as teaching Literacy to Grade R learners who are visually impaired is concerned, and therefore it would be significant to unpack some of the concepts that underpinned Grade R in-service teachers' knowledge, particularly in terms of using Braille to teach Literacy. Three concepts will be unpacked to facilitate an understanding of the background of this study. These concepts are literacy, the background history of Braille, and special education history in Lesotho.

1.1.1 Literacy

Literacy is a social practice in which children can participate with increasing knowledge and competence. In terms of the visually impaired, Brambring (2006) indicates that to ensure access and inclusion, books should incorporate various textures, sounds that are activated by buttons, and communication systems such as Braille and sign language to accommodate learners with different disabilities. He further posits that information and computer technologies enable children to partake in planned games as well as in open-ended activities such as painting, cutting,

drawing, and collage-making, which develop various muscles and fine motor skills in children. Moreover, he states that touch screens enable access to a wide variety of creative computer programs for children who have restricted mobility and movement. Clearly, in our digital age technology integration is needed in early childhood learning to enhance learners' thinking ability. Moreover, such facilities should not be restricted for use by sighted learners, but Grade R learners with visual impairments (VI) should particularly be involved in technological activities that are accessible to them (Koehler & Mishra, 2009).

Lenyai and de Witt (2008) posit that literacy plays a major role in the education of young children. They further explain that because of the constant exposure to written texts and materials in a variety of environments, many young children who are sighted are able to learn to read and write prior to formal schooling. Unfortunately, children who are visually impaired have restricted experiences with literacy in their immediate environments and with books, especially in developing countries where technology is not highly used. Due to the scarcity of Braille materials, children who are visually impaired do not automatically partake in literacy learning. Instead, their literacy engagement is coordinated by teachers of the visually impaired (TVI), orientation and mobility instructors (O & M), and parents (Massof, 2009). Honig (2007) views literacy as a fundamental human right of everyone in the universe. Literally, every human who is living has the full right to be literate, irrespective of being sighted or visually impaired. This claim relates to Keefe and Copeland's (2011) perspective that a basic human right to inclusive educational opportunities is for all people with or without disabilities. Therefore, Grade R learners who are sighted or visually impaired need to learn the concepts of literacy as their basic human right.

1.1.2 Background History of Braille

Braille was invented by a Frenchman called Louis Braille in the nineteenth century and it was the first writing which bears his name (American Foundation for the Blind, 2015). Louis Braille modified the 12-dots alphabet that had been created by Charles Barbier as a language by touch designed for military and secret purposes. Barbier's code was known as *Ecriture Nocturne*, or 'night writing'. Louis Braille modified these codes into six raised dot cells that form letters of the

alphabet, whole words, punctuation marks, and even numbers. Kimbrough (2005) affirms that it took decades before Braille dominated as the tactile system of reading and writing for people who are blind or who have low vision and who cannot benefit from ordinary printed materials. It was only in 1852, after Louis Braille's death, that countries recognised and officially declared Braille code a means of communication for people who are blind or have low vision (Kimbrough, 2005). Many countries that were colonies of the British Empire used Standard English Braille (SEB), whereas the United States of America (USA) used different codes before it adopted English Braille American Edition. Due to numerous challenges, fluctuating environments and many rules and regulations of SEB, there was a paradigm shift from SEB to Unified English Braille (UEB).

The International Council on English Braille (ICEB) was launched in 1991. The ICEB was formed by nine member states, with the Republic of South Africa being one of the members. This body focused mainly on standards-setting for Braille in the English language and, as a result, Unified English Braille (UEB) was developed. UEB is a Braille code developed to combine several existing Braille codes into one common code so that all English speaking countries throughout the world can use it (Clear-Vision Children's Braille Library, 2013). These various codes include a literary code, a science code, a mathematics code and a computer code. UEB enables computers to convert print into Braille and Braille into print. UEB is built into most Braille translation software programs, screen readers, and note-takers in order to be accessible and to reduce the costs of buying different software. UEB is also used to lessen the volume of paper required for reproducing books in Braille and to ease the reading process. According to Clear-Vision Children's Braille Library (2013, p. 2), "Unified English Braille (UEB) took over twenty years to develop. It has now been adopted in all the major English speaking countries worldwide, including Australia, Canada, New Zealand, Nigeria, South Africa, the UK and the USA." Consequently, it is expected that the main code for reading and writing material will be Unified English Braille throughout the English speaking world by 2016.

1.1.3 Special Education History in Lesotho

According to the document entitled “Training of Qualified Teachers on Special Educational Needs” (TQTSEN) (2011) people with disabilities in Lesotho were the responsibility of churches, individuals and non-governmental organisations (NGOs) prior to 1980. The main focus was on the following disabilities: visual impairment (VI), hearing impairment (HI), physical disability (PD), and mental retardation (MR). Csapo’s report suggested that the Ministry of Education and Training (MoET) should provide initial pre-school, intermediate and senior phase teachers with in-service training programmes to equip them with the skills and techniques necessary to deal with learners with special educational needs (LSEN) as part of their basic teacher preparation program. This was introduced both at the Lesotho College of Education (LCE) and the National University of Lesotho (NUL). For the first time, the MoET included a statement specifically for children with disabilities in its policies:

“MoET will promote the integration of the children with special educational needs/disabilities into the regular school system at all levels to enable them to acquire appropriate life skills and education.”

Many countries have advocated for the inclusion of all children in regular school settings, and the Lesotho’s government was no exception in the advocacy of inclusive education. As a result, the MoET introduced a one-year special education programme at the Lesotho College of Education in 2009 to train and equip teachers with basic skills, strategies and techniques on how to deal with learners with different disabilities in the three specialisation areas (visual impairment [VI], hearing impairment [HI] and learning disabilities [LD]).

1.1.4 Geographical Features of Lesotho

Lesotho is a small mountainous country with a population of ±1.8 million. It is divided into ten districts. Maseru, which was the study location, is the capital of Lesotho. Lesotho is surrounded and landlocked by the Republic of South Africa. Its geographical landscape has been divided into four parts, namely the Highlands, Lowlands, Foothills and the Senqu River Valley. The climate of Lesotho is highly variable, consisting of four distinct seasons. Winter is severe, especially in the mountain areas, where snow falls almost every year. The mountainous terrain makes a great portion of the country inaccessible in winter.

1.1.5 Lesotho's Educational System

The provision of education in Lesotho is a joint venture among the government, churches and the community. Lesotho's education system is divided into four phases, namely primary education, secondary education, high school education and tertiary education. The primary education phase normally takes seven years to complete. It was only in 2007 that the Grade R phase was introduced and attached to the primary education phase; thus the total number of years a learner has to spend in primary school changed to eight years. At the end of the primary education phase, the learner writes a Primary Leaving School Examination (PLSE). It is in this educational phase that my study focused on in-service teachers' knowledge of using Braille to teach literacy to visually impaired Grade R learners.

Secondary education takes three years and at the end of the third year the learner is awarded a Junior Certificate (JC). High school education is two years and at the end of the year of completion the learner is awarded the Lesotho General Certificate of Secondary Education (LGCSE). After completion of high school education, a learner could enrol with a vocational school, teacher training college or university, depending on his/her pass mark.

My study's focus was on using Braille to teach literacy to visually impaired learners in Grade R. Unlike in ordinary mainstream schools where Grade R learners are admitted at the age of five or six years, Grade R learners in schools for the blind are admitted at the age of seven or eight years or above, because they are residing at the schools. They have to live in the residences where they are taught life skills and where they undergo orientation and mobility training. The matrons are always present to assist these children with the things that they grapple with.

1.2 Location of the Study

My study was conducted at Bartimia Primary School in the capital town Maseru, Lesotho. For the purpose of confidentiality, 'Bartimia' is a pseudonym for the school. Bartimia Primary School was founded in 1974 by the Catholic Church with only four learners who were congenitally blind. Educationally, learners who are congenitally blind are those who are born with no vision, or at most, with the ability to tell light from darkness and who learn through

Braille without the use of vision (Mariga & Phachaka, 2011). At that time, learners who were admitted at Bartimia Primary School had only visual impairment; however, they are currently admitting learners with multiple disabilities. The school provides primary education and boarding facilities for learners who are visually impaired. It teaches the national primary curriculum in addition to the development of life and social skills. Different life skills are taught which include personal grooming, getting dressed, washing, tying shoelaces, and orientation and mobility training activities. In addition to these life skills, the school teaches learners who are visually impaired how to read and write Braille. All learners who have visual impairment (VI) problems from the ten different districts of Lesotho are accommodated in this school and are bound to use Braille as a means of communication. Grade R learners are expected to spend three years at Bartimia Primary School before they can be transferred to a nearby mainstream school to pursue their Grade 3 and the following grades. However, although learners are accommodated at the nearby mainstream school, they often come to Bartimia Primary School for their work to be converted into print and teachers' work to be converted into Braille.

Bartimia Primary School accommodates learners who are visually impaired from diverse cultural and linguistic backgrounds. All these learners speak Sesotho as their mother tongue; however, they come from different areas with different dialects. The boarding learners who are visually impaired are from the four different geographical regions of the country. Bartimia Primary School is situated at Cathedral area in Maseru. At the time of the study, there were approximately eighty (80) boys and girls in the boarding facility from Grade R to Grade 7. Some of these learners had other disabilities besides visual impairments; as a result, they were categorised as having multiple disabilities. The school accommodates learners who have been visually impaired since birth as well as those who became visually impaired while they were attending mainstream schools. Six teachers, including the principal, were employed at the school at the time of my study. It has five classrooms, an office, a boarding house for girls and boys respectively, a kitchen and a lounge. The non-academic staffs comprise one male and two females who take care of the visually impaired boarders.

The learners at Bartimia Primary School do not pay school fees because it is a free primary school. The school is funded by the government and by donations from non-governmental organisations.

When I visited the school, the premises were free from unnecessary obstacles and it was clean. There was a small, fenced football playground in front of the five classrooms. Near the football playground was a computer room and the principal's office. Housing was provided for the principal and another teacher close to the school. At these houses there was a swing where the learners could play during leisure and recreational time. A poultry house for broiler chickens and toilets were located near the swing. The area surrounding the school was paved and fenced with devil's fork fencing.

The next section presents a brief profile of each in-service teacher who participated in my study.

1.2.1 Teachers' profiles*

**For the purpose of anonymity, all the in-service teachers who participated in my study are referred to by a pseudonym.*

Teacher Lefiso was in her early thirties and she had been teaching at Bartimia Primary School since 2008. She had received her training in writing and reading Braille at Optima College in the Republic of South Africa. She had no teaching qualification. Each academic year new Braille beginners would be assigned to her. She regarded these children as Grade R learners because they would be new in the school environment. Their ages would range between seven and eight years, with some even slightly older.

Teacher Tlhohonolofatso was in her late fifties. She had been teaching at Bartimia Primary School since 1986. She held primary teaching qualification. In 1990 she was trained in Braille, orientation and mobility at Montfort College in Malawi. She had been teaching all the subjects in the primary education phase at Bartimia Primary School since 1986.

Teacher Moleboheng was in her early forties. She received her primary teacher education and special education qualifications, and she specialised in visual impairment. She had previously taught at a government primary school at intermediate level until 2006. At the time of my study, she had had four years' teaching experience at Bartimia Primary School.

1.3 Piloting the Study

Upon receipt of the approval for the study by the Research Office and Ethics Committee of the University of KwaZulu-Natal, I tested the interview questions on teachers who had earlier taught learners who were visually impaired during their teaching practicum. I used the social media such as message texting and emails to ensure that the participants in the pilot study clearly understood the questions in the questionnaire. Hennink, Hutter and Bailey (2011) stipulate that pre-testing observation and interview schedules helps the researcher to see if the questions are clear and unambiguous. Any areas that needed to be clarified were attended to prior to the study.

1.4 Statement of the Problem

The curriculum policy of the Ministry of Education and Training in Lesotho states that in-service teachers are to be knowledgeable of all literacy concepts (i.e., content knowledge). In addition to literacy concepts, TVIs (i.e., teachers of the visually impaired) should also be knowledgeable of the Braille codes (i.e., technology knowledge) that are to be taught to all Grade R learners with visual impairments. Literacy concepts should be taught in educationally rich and conducive environments that comprise of various learning centres to enable the learners to interact with literacy concepts at their own appropriate and convenient time (Machado & Botnarescue, 2011). Dennis, Lynch and Stockall (2012) indicate that literacy concepts such as oral language, alphabet knowledge, book knowledge, print knowledge, and writing skills enable all Grade R learners to have privacy, self-confidence, independence and a sense of belonging in the surrounding world. Being able to read and write gives one an opportunity to be independent and have self-esteem. Therefore, Grade R learners with visual impairments need to learn literacy concepts through the use of Braille in order to attain independence and a sense of belonging in their respective communities.

Grade R learners with visual impairments need to be taught using concrete and real objects with different textures and sounds so that they will explore them by using their remaining senses of hearing, touching, tasting and smelling. Hearing and touching are used to compensate for the loss of sight and are regarded as the most dominant senses for people with visual impairments.

However, during my teaching practice I realised that the Grade R in-service teachers that I worked with taught only three literacy concepts, namely oral language, alphabet knowledge, and

writing knowledge. They taught Braille as a ‘standalone’ subject and not as a tool that would enable learners with visual impairments to read and write in different subjects. I discussed my observations with those teachers and they shared the sentiment that they focused mainly on oral and alphabet knowledge because, if learners mastered alphabet knowledge orally, it would be easy to integrate other subjects. They further indicated that their learners had never attended pre-school or home-based care centres; they were beginners in the school environment and therefore they had to be taught school routines, appropriate behaviour, and language. For these reasons it took two years or more before they could allow their learners to master writing skills. It was these observations that prompted my curiosity to embark on this study. I felt compelled to explore in-service teachers’ knowledge of using Braille to teach literacy skills to visually impaired Grade R learners, in order to gain extensive and in-depth understanding of the phenomenon. This study was conducted in Lesotho and involved teachers of visually impaired Grade R learners. I envisaged that an exploration of such teachers’ knowledge and experiences would contribute significantly to the pool of knowledge associated with the education of visually impaired learners.

1.5 Literature Review

Johnston, McDonnell and Hawken (2008) stipulate that literacy concepts should be developed in the early years of a child’s education by means of active and meaningful activities and within an environment that is conducive to learning. Kostelnik, Soderman and Whiren (2011) argue that it is important that learners are engaged in various energetic activities such as role-playing situations, video-taped presentations, learners’ tape recordings, puppet plays, partner sharing and responses, the seating chart tally marks game, readers’ theatre presentations, and small group discussions dealing with reading and writing to arouse learners’ flexibility and oral language in the classroom situation. Dynia and Justice (2015) postulate that teachers are expected to introduce learners to book knowledge and print awareness by letting them practise holding books in a proper way and pretending to read by turning pages. This means that learners who are visually impaired will not be regarded as ‘the exception’ because they will also have to practise holding books properly and know that writing starts from the left and moves to the right, and from top to bottom, even though their writing starts from right to left when they use slate and

stylus so that the punched dots will appear at the other side to enable them to read from left to right. In-service teachers should introduce learners with VI to practise holding a slate properly as well as the way of punching the dots to create writing.

Kostelnik, Soderman and Whiren (2011) state that alphabet knowledge is about learning upper- and lower-case letters, the differences between letters, and joining them to form words. In-service teachers should therefore teach learners who are visually impaired the lower and upper case letters by introducing them to the capital letter sign which is dot six. If one capitalises the letter in Braille, that letter should be preceded by dot six, but if the whole word is capitalised, dot six has to be doubled.

Teachers should also provide learners with a variety of writing materials to enable them to practise writing at their own pace and for different purposes. In support of this, Phillips, Clancy-Menchetti and Lonigan (2008) state that learners should be taught in a literacy-rich environment that should comprise various learning centres such as a library, a listening centre, a writing centre, an art centre, and a fantasy play centre, with pictures with different textures and sounds to enable the learners with VI to explore extensively in order to get meaning out of touch.

1.6 Purpose and Rationale of the Study

The purpose of my study was to explore how in-service teachers used Braille to teach Literacy to visually impaired Grade R learners. I was prompted to conduct this study by my own personal experiences. In 2010 I was a student teacher at the Lesotho College of Education where I pursued my Advanced Diploma in Special Education. I majored in visual impairment. One of the programme requirements was to engage in a three-month teaching practicum at any school where there would be visually impaired learners. As a result, I conducted my teaching practicum at Bartimia Primary School in Maseru, Lesotho, as it was one of the schools for the blind that I could access. I taught literacy to visually impaired learners. I also had to teach orientation and mobility (O & M) skills and daily life skills. During those three months I found it very challenging to teach literacy to learners who were visually impaired because literacy and Braille each has unique concepts. Moreover, Braille has its own particular rules that one has to abide by, and this meant that I had to teach subject content matter knowledge (Literacy) while at the same time integrating Braille code (i.e., technology knowledge) to enable the learners who were

visually impaired to read and write in that particular subject that I was teaching. I encountered many challenges, particularly in terms of the age categories of the learners. In one class there were learners of different ages such as Braille beginners, those who had spent more than one year in the same class, and those who encountered blindness while they were attending a regular school in their communities. I even noticed that some of the teachers did not have any formal training in the education profession and thus they lacked knowledge of the literacy concepts and the methodology to teach Grade R learners who are visually impaired. They focused mostly on Braille codes and oral language. Consequently, I was curious and inspired to undertake the study and to explore in-service teachers' knowledge of teaching literacy to visually impaired Grade R learners.

1.6.1 Objectives of the study

- To explore in-service teachers' knowledge of teaching literacy using Braille to visually impaired learners in Grade R;
- To examine how in-service teachers' knowledge of teaching literacy when using Braille influences their teaching of literacy to visually impaired learners in Grade R.

1.6.2 Research Questions

My study was guided by two research questions:

- What knowledge do in-service teachers using Braille have for teaching literacy to visually impaired learners in Grade R?
- How does in-service teachers' knowledge of teaching literacy when using Braille influence their literacy teaching of visually impaired Grade R learners?

1.7 Research Methodology

1.7.1 Paradigm

I employed an interpretive paradigm in my study. This was the approach of choice because I believed that multiple realities could be constructed from my interpretations of in-service teachers' lived experiences of teaching literacy. An interpretive paradigm involves information of human behaviours, beliefs and lived experiences (Cohen, Manion & Morrison, 2011). Furthermore, its aim is to understand and describe how people make meaning of their contextual experiences and actions and how they interpret their real-world situations. The purpose of employing an interpretive paradigm is to gain in-depth understanding of how people make sense of the context they are working in. In this regard, a set of realities that cannot be generalised may be encountered. My aim was therefore to use an interpretive paradigm in order to procure multiple responses from the Grade R in-service teachers about their knowledge of teaching literacy, and to determine how the knowledge of teaching literacy using Braille influenced their literacy teaching. This paradigm assisted me in understanding how Grade R in-service teachers made meaning of their literacy teaching when in the school where they were employed. I was granted opportunities to have direct conversations with the participants in their real-world teaching field. I also had a chance to observe my participants during literacy teaching. I further perused the documents that guided them in their teaching to supplement the generated empirical data that I obtained from other tools. This also facilitated the process of triangulation to ensure the validity and reliability of the data.

1.7.2 Research Approach

This study adopted a qualitative approach. According to Creswell (2009, pp. 78-79), a qualitative approach "...is grounded in a naturalistic setting of the phenomenon under study." Researchers using this approach are therefore likely to generate data in the field at the site where the participants experience the issue or problem under study. Creswell (2013) extends this argument by articulating that, in this approach, a researcher is regarded as a key instrument because he or she is the one who generates data through the use of various data generation tools. As a key instrument I visited Grade R in-service teachers at their school where I used semi-structured interviews, structured observations and document analysis to generate the empirical data that

were required for my study. Moreover, the qualitative approach facilitated social interactions during interview sessions with my participants where I got to know them better. I was able to observe the participants during their real teaching of literacy and I also had a close look at their daily lesson plans as well as at the Literacy and Braille syllabuses.

1.7.3 Research Methodology: Case Study

This study adopted a case study as its methodological approach. Rule and John (2011, p. 18) explain that a case study is a “systematic and in-depth study of one particular case in its context.” This case study applied to one school situated in Maseru, Lesotho, where in-service teachers taught literacy to visually impaired Grade R learners. Four in-service teachers at their work place (i.e., a school) were targeted to be the participants in this study. One Grade R in-service teacher withdrew from the study due to personal reasons that were not disclosed to me. As a result, no replacement was made because of limited time and the school was towards mid-term break. Consequently, I was compelled to continue with three participants in my attempt to obtain an in-depth understanding of the knowledge that they had for teaching literacy to visually impaired Grade R learners. I also explored how their knowledge of teaching literacy influenced their teaching of literacy when they used Braille.

1.7.4 Sampling

Maree (2009) refers to sampling as the decision the researcher makes about which people, setting, events or behaviours to include in the study. Therefore, I decided to include the Grade R in-service teachers purposively because I regarded them as the potential holders of the required data for my study. I based my decision on the characteristics that I supposed them to have in order to consider them as potential holders of data. At the time of the study they taught literacy to Grade R learners who were visually impaired and they were working at Bartimia Primary School, which was the only school for the visually impaired that I could access.

1.7.5 Data Generation Tools

Data generation tools are the instruments used to generate data in empirical research (Creswell, 2009). Henning (2005) further explains that qualitative research allows the use of multiple sources of data tools in order to generate trustworthy data; therefore this study employed multiple data tools namely semi-structured interviews, structured observations, and document analysis of teachers' daily lesson plans and the Literacy and Braille syllabuses. In support of the use of various data tools, Thomas (2011) states that in qualitative research multiple sources could be used to yield rich and trustworthy data. Below is a brief discussion on each of the data tools that I utilised in my study to generate the empirical data.

1.7.5.1 Interviews

I conducted semi-structured interviews with the respondents using an interview schedule. I also asked additional, probing questions in order to get an in-depth understanding of what knowledge the respondents had in using Braille to teach literacy to visually impaired Grade R learners, and to determine how their knowledge of teaching literacy influenced their teaching of literacy these learners. According to Maree (2009, p. 87), an interview is “a structured and well-planned conversation between the researcher and the participant”. Semi-structured interviews allow the researcher to ask open-ended questions and to probe for deeper meaning. King and Horrocks (2010) encourage the use of interviews as they allow a researcher to get extra information from the interviewee. Having face-to-face conversations allowed me, for example, to read the facial expressions of my interviewees. By doing this I was able to notice when the teacher was not sure and I could ask additional questions to probe deeper. The latter authors also argue that interviews promote social relationships between the researcher and the interviewee/s. Each interview session took approximately thirty minutes.

1.7.5.2 Observation

King and Horrocks (2010, p. 35) state that observation means that “the researcher goes to the site of the study and observes the actual activities that are taking place.” Observation allows the researcher to gain first-hand data and report things that he or she witnessed while they are

happening. I used a structured observation schedule as I had a picture of the things that I wanted to observe during the teaching and learning processes of literacy when Braille was used in the classroom context. I considered coherence of the lesson objectives, introduction, activities and teaching methods that were applied during teaching. I further looked closely at how, and if, literacy was integrated with Braille concepts. I also observed whether the teachers took cognisance of their learners' different learning styles.

1.7.5.3 Document analysis

Documents are “existing written material that can be relevant to the undertaken study” (Heck, 2011, p.45). Cohen, Manion and Morrison (2011) state that the documents a researcher may peruse may be published or unpublished; they can be memos, letters, and meeting agendas and minutes. In my study the documents that I considered relevant were teachers' daily lesson plans and the Literacy and Braille syllabuses. I analysed those documents to determine if the Literacy syllabus covered the domains that are considered major facets of child development: aesthetic, affective, cognitive, language, physical, spiritual and social. I also looked closely at the format or layout of the lesson plans and whether they contained the main phases of a lesson, which are beginning, middle and end. Smith and Throne (2010) indicate that the beginning part of the lesson comprises the theme or topic, varied objectives for different learners' abilities in the classroom, and a short introduction to capture learners' attention. The middle part (body) of the lesson contains a variety of teaching methods and materials to accommodate different learners' learning styles, learner activities, and alternative ways of assessing learners during or after instruction. Finally, the closure of a lesson should be a brief review of the concepts and skills taught throughout the lesson. In closure, learners might share what they have learned in the form of a short summary or by answering the teacher's questions, or by constructing their own.

1.8 Theoretical Framework

My study was underpinned by Koehler and Mishra's (2009) theory of technological pedagogical and content knowledge (TPACK). This theory is built on Lee Shulman's constructs of pedagogical content knowledge (PCK). Koehler and Mishra (2009) articulate that there are three main components of teachers' knowledge of technology integration. These components are: content, pedagogy and technology. They identify teachers' knowledge of technology integration as content knowledge, pedagogical knowledge, technology knowledge, technological content knowledge, technological pedagogical knowledge and, lastly, technological pedagogical and content knowledge. Shulman (1986, p. 8) refers to pedagogical content knowledge as "a complex process of understanding the context, knowing learners, selecting appropriate teaching and learning materials, and knowing how to manage teaching and learning in order to facilitate specific subject content." Mishra and Koehler (2006) indicate that PCK is consistent and related to Shulman's idea of pedagogy that is pertinent to the teaching of a specific content. They specify that PCK transformation takes place when the teacher interprets a subject matter, finds different strategies to represent it, and then contextualises, adapts and tailors the instructional materials to alternative links and learners' prior knowledge. For these reasons I found Koehler and Mishra's theory of technology integration suitable for this study because its application assisted me in understanding how in-service teachers taught literacy (content knowledge) and the use of Braille (technology knowledge) in the context of the expectation that teachers of VI Grade R learners were expected to be technologically literate so that they would be able to assist their learners to read and write Braille.

1.9 Definition of key concepts

In-service teachers

Shaik (2015) explains that in-service teachers are individuals who teach learners from pre-school to high school in the education hierarchy. Grade R in-service teachers are individuals who teach learners from the age of four to six and a half (DBE, 2011).

Literacy

Literacy has been explained by numerous authors but for this study the definition by Emerson, Holbrook and D’Andrea (2009, p.615) was most suitable. They define literacy as “the ability to read and write [that] which is written in print, sign language or Braille and which can be read from print, pictures or Braille materials”.

Braille

The American Foundation for the Blind (2015, p. 2) states that Braille is “a system of raised dots that can be read with the fingers through touch by people who are blind or who have low vision and with eyes by people who are sighted.” Elaborating on the definition of Braille, the Royal National Institute for the Blind (1992, p. 1) clarifies that “Braille is a system of embossed signs which are formed by using combinations of six dots, arranged and numbered.” It is composed of cells of dots which match nicely with the fingertips as information receptors. Below is an example of a Braille cell:

1●●4

2●●5

3●●6

Braille is not a language; rather, it is a code in which many other languages like English, Chinese, Spanish and African languages can be written (Howse, 2006). Braille provides a means of literacy and communication to all people who are blind or have low vision.

Grade R learners

R stands for reception year. Grade R is the end of preschool phase before starting Grade 1 in formal schooling. Grade R learners are young children at the age of five and a half to six years (Davín & van Staden, 2005). In my study, Grade R learners were aged between seven and eight years and above.

Visual Impairment

Visual impairment is an umbrella term for total blindness and low vision. It is a condition that, even with correction, adversely affects a child's educational performance (Teachers' Guide on Visual Impairments, 1998). Visual impairment is divided into two categories, namely (a) blindness and (b) low vision. In the context of this study, visual impairment refers to learners who were totally blind and were using Braille as their means of written/reading communication.

a) Blindness: "...visual acuity worse than 20/400 with the best possible correction, or a visual field of 10 degrees or less" (Mandal, 2013, p. 1). He extends that blindness is having either no vision or, at the most, light perception (i.e., the ability to tell light from darkness), but no light projection (i.e., the ability to identify the direction from which the light comes).

b) Low vision: "...means vision between 20/70 and 20/400 with the best possible correction, or a visual field of 20 degrees or less" (Slavin, 2009, p. 28). He further explains that low vision is a condition in which clarity of sight is reduced permanently to such a level that an individual is incapable of performing tiny daily living visual tasks (Slavin, 2009).

1.10 Overview of Chapters

This study report is partitioned into five chapters:

Chapter one presents a description of the study background which contains the following sections: literacy, history of Braille, special education history in Lesotho, geographical features of Lesotho, and Lesotho's educational system. It also presents the location of the study, statement of the problem, the literature reviewed that guided my study, and the purpose and rationale of the study. Furthermore, the research objectives and questions that directed my study are discussed in this chapter. Other aspects that are briefly illuminated are the research approach and the research paradigm that underpinned my study. I also provide a brief explanation of the purposive sampling technique and the data generation tools that were employed. Mishra and Koehler's theoretical framework of teacher knowledge of technology integration, which steered this study, is explained. Finally, I discuss definitions of the key concepts of the study and present a brief overview of all the chapters.

Chapter two is an overview discussion of published scholarly articles, books, journals and e-books that were used in relation to my study entitled *Exploring in-service teachers' knowledge of using Braille to teach literacy to visually impaired learners in Grade R*. Mishra and Koehler's theoretical framework of teacher knowledge of technology integration that guided this study is explained in greater depth.

Chapter three presents a discussion on the research paradigm and approach that underpinned this study. The case study approach and the purposive selection of three sampled participants are illuminated. The three data generation tools that assisted me to generate the empirical data are explained. These tools comprised semi-structured interviews, structured observations, and document analyses of teachers' daily lesson plans and the Braille and Literacy syllabuses.

Chapter four presents a discussion on the data that were generated. Based on the data, I discuss the findings of the study. The data were analysed inductively and deductively by organising, classifying and categorising the information. The themes that emerged were then categorised and identified accordingly.

Chapter five presents the conclusions drawn from the findings of the empirical research. Implications for future research are presented and recommendations are offered.

1.11 Conclusion

This chapter dealt with the background of the study. Five main areas were illuminated, namely literacy, a brief history of Braille, special education history in Lesotho, geographical features of Lesotho, and Lesotho's educational system. I further discussed the study location and presented a statement of the problem. The literature that was reviewed, and that formed the basis of my study, was also discussed. Moreover, the purpose and rationale of the study and the research objectives and research questions that guided my study were briefly stated. I also discussed the study paradigm and the research approach that underpinned my study. The case study approach using one school was explained and a brief explanation of the participants that had been selected purposively was offered. I also discussed the data tools that I utilised during generation of the data. These tools were semi-structured interviews, structured observations and document analysis of teachers' daily lesson plans and the Literacy and Braille syllabuses. Koehler and Mishra's

theoretical framework that guided my study was briefly discussed. The next chapter presents an overview of the literature that was relevant to my study.

Chapter Two

Literature Review

2.1 Introduction

This literature review chapter aims at presenting a discussion of the literature that was relevant to my study. This chapter reviews the relevant literature under the following headings: literacy teaching and learning in diverse Grade R classrooms; Reception Year (Grade R) literacy-related concepts and activities; and the roles and responsibilities of teachers of learners with visual impairments. I further discuss the requirements for an effective learning environment for Grade R learners with visual impairments. In order to understand the use of Braille in literacy teaching, I discuss the necessity for planning teaching and learning activities, and the importance of learning Braille in the life of learners with visual impairments. The theoretical framework that underpinned this study is also illuminated in more detail.

2.2 Literacy Teaching and Learning in Diverse Grade R Classrooms

Kway, Salleh and Majid (2010) state that young children, before having any formal literacy instruction, tend to display many capacities and skills that can be viewed as directly relevant to their literacy development and learning. Beliefs about exactly which of those capacities are crucial pre-literacy skills and which should be promoted by parents, caregivers, preschool teachers and teachers of visually impaired learners (TVIs) abound. Roe, Rogers, Donaldson, Gordon and Meager (2014) argue that sighted children are constantly exposed to learning through pictures, television views and visual events that occur in their environment. The visual exposure to the environment gives sighted children the ability to learn to know how to read and write even before attending any formal schooling. They are exposed to books, art, pictures, and nonverbal communication such as facial expressions, whereas their peers who are visually impaired have an incidental exposure to the world; thus, if certain skills are not taught and developed well, they reveal the delays in the development of oral language and life skills. Sometimes, visually impaired children even end up being illiterate (Erickson & Hatton, 2007). This poses a great impact on how teaching and learning of literacy takes place in any Grade R

classroom. There is general consensus that early emergent literacy-relevant skills include the capacity to recite the alphabet, to name and print letters, and to spell simple words such as one's own name (Lewis & Tolla, 2003). The latter authors further state that emergent literacy involves recognizing letters and signs in the environment as well as identifying books by their titles and handling books and other literacy artefacts (p.12). This is seen as appropriate to sighted children who are able to explore, discover and imitate adults and their peers; hence they have plenty of written books, pictures, collaged materials and art. Children normally learn through exploration, imitation and discovery. They also learn through actions for which they need hands-on activities and by manipulating real and improvised materials and objects (Joubert, Bester, Meyer & Evans, 2013; Lewis & Tolla, 2003). This manner of exploration and self-discovery is easy to achieve for sighted children compared to learners who are living with different disabilities, such as those with visual impairments.

It is generally known that Grade R learners are learning, *inter alia*, through their sensory interactions. This means that they normally use all five of their senses; that is, hearing, smelling, tasting, touching and seeing. Thus, when they come into contact with an object, they explore it extensively by smelling, touching, tasting, listening to and looking at it. Brierley (1987) indicates that the use of various senses helps in building up knowledge of the world; as a result, children should be allowed opportunities for trial and error. Such exploratory activities are the basis of all later intellectual activity. Brierley (1987) states that touch and vision are seen as the two senses of dominant importance in helping children to understand their surrounding world. Through vision and touch, a child is able to move towards an object, explore it extensively using touch, and a child can also move away from danger. Additionally, Barclay (2014, p. 6) states that "vision and hearing are the two senses that allow access from a distance to people, objects, actions and the environment. Consequently, when a child is born with a visual impairment, or becomes legally blind at an early age, the journey of learning to make sense of the world is altered, requiring a deliberate focus on the development of the senses of hearing and touch."

Learners with visual impairment have an incidental exposure to the world due to the essential missing sense: their vision. They hardly discover or explore on their own. For this reason, certain skills should be taught and developed by parents and/or caregivers, visual impairment educators,

teachers, and orientation and mobility (O & M) instructors so that they will eventually socialise, interact, communicate and play with their peers (Lewis & Tolla, 2003).

Those skills that need to be developed are compensatory access skills, social interaction skills, recreational and leisure skills, assistive technology and technology skills, O & M skills, independent living skills, career education, sensory efficiency skills, and self-determination skills (Johnston, McDonnell & Hawken, 2008). As a result, learners who are visually impaired need hands-on activities to manipulate real or concrete objects in order to have first-hand experience of a particular content that is being taught so that their sensory skills are well developed. Additionally, Swallow and Huebner (2006) emphasise the vital importance of direct hands-on activities as it will enable the learners who are visually impaired to get information about the people, objects, and events in their environment and eventually their fingertip sensitivity and hearing skill will be developed.

Johnston, McDonnell and Hawken (2008) stress that in order for all Grade R learners to learn literacy concepts such as phonological awareness, print awareness, letter recognition and early writing skills, they need to engage in active and meaningful activities, experiences and opportunities which will allow them to explore, discover, manipulate and even role-play. They further emphasise that the teachers of learners who are visually impaired should have to modify the activities so that they will suit the needs of the learners. For example, when introducing all Grade R learners to print awareness or book knowledge, the teacher has to label all the objects in the classroom in both print and Braille to allow the learners who are visually impaired a full exploration. This means that a teacher has to be knowledgeable about different strategies and/or instruments that could be used to assist learners who experience barriers in learning. When teaching learners who are visually impaired, the teacher should have knowledge of and the ability to use Braille (i.e., content and technology knowledge). Hence, learners who are visually impaired should be exposed to Braille books, tactile books, and Braille tools such as a slate, stylus, Perkins Brailier, a pegs slate, and assistive technological devices. Teachers should be cognisant that these are learners with special educational needs (LSEN).

2.3 Reception Year Literacy-related Activities and Concepts

Maurer (2007) stipulates that most of the activities in the reception class need vision to be done effectively. For example, identifying colours requires vision, which is significant in the early childhood development years. She further explains that some activities do not need vision, such as naming letters of the alphabet, singing rhyming words, recognizing letters, naming objects, people, places, naming geometric shapes, and describing oneself. However, learners who are totally blind do not have a clue of things such as colours because they need vision, but they can learn to visualise colours with common objects or events such as 'the sky is blue'. Therefore, learners who are visually impaired learn various colours just by listening to their sighted counterparts.

Literacy concepts have attracted the attention of various researchers who have conducted studies on how they should be developed in diverse teaching and learning environments. Erickson and Hatton (2007) conducted a study that focused on expanding understanding of emergent literacy. Based on their findings, they classified the concepts of literacy as oral language, print awareness, alphabet knowledge, phonological awareness, and early writing skill. These literacy concepts or skills should be developed in all Grade R learners, including those who are visually impaired (Johnston, McDonnell & Hawken, 2008). In addition, literacy concepts should be developed in the early years by means of active and meaningful activities and an environment that is conducive for learning. Emerson, Holbrook and D'Andrea (2009) stipulate that Grade R learners who are visually impaired do not only learn letters' grammatical rules and spelling, but they have to overlay that knowledge with Braille codes and their rules. Furthermore, they need to develop tactile skills so that they will be able to identify, classify and eventually read Braille dots and make meaning from touch (Massof, 2009). What is complex about this is that one omission of a Braille dot alters the whole meaning of the word (Cooper & Nichols, 2007).

According to Palmer and Bayley (2010), all Grade R learners should learn these literacy concepts in order to develop their literacy skills:

Oral Language

Oral language involves speaking and listening (Rief & Heimburge, 2006; Kostelnik, Soderman & Whiren, 2011). Oral language, or oral communication, is necessary in every classroom situation, thus teachers must provide lively activities which will bring the content and the curriculum to the centre of learning (Kostelnik, Soderman & Whiren, 2011). These authors note that learners should be engaged in various energetic activities such as role-playing situations, videotaped presentations, learners' tape recordings, puppet plays, partner sharing and responses, seating chart tally marks game, reader's theatre presentations, and small group discussions dealing with reading and writing. They also claim that the aforementioned activities arouse learners' flexibility and motivation in the classroom situation. Oral language is seen as important for later reading skill of every learner, including learners with disabilities. Good development of oral language will lead to fluency in reading in later years (Henning, 2005).

According to the New South Wales (NSW) Department of Education and Training (2006), in order for learners who are visually impaired to develop oral language, the teacher should give a detailed description of every action a learner or a teacher is making and the parent should do likewise at home. This means that the teacher and parents of a VI learner should work hand-in-hand. There should therefore be a work plan for both teacher and parent for a learner while at home and at school. The parent and teacher of learners who are visually impaired have to use similar words for objects that are found in both locales. In addition, Allen and Cowdery (2009) emphasise the importance of giving a detailed description of every action done in the classroom and at home as the learner who is visually impaired will be familiar with a variety of words commonly used at home and at school. In this way visually impaired learners will gain vocabulary which is necessary in literacy. In support of this argument, Roe, Rogers, Donaldson, Gordon and Meager (2014) posit that descriptions of events in the environment play a major role in the oral language and vocabulary building of learners who are visually impaired, because they cannot learn on their own. They need to be assisted by adults or advanced peers. They further note that oral language enables learners who are visually impaired to establish social contact with sighted peers, which means that important friendships are formed among learners with various abilities and disabilities.

Book knowledge and appreciation and print awareness

Doyle and Bramwell (2006) refer to book knowledge and appreciation as an ability to convey a story, foresee the result of the read story, and role-play the characters that appear in the story. It is also described as an ability to understand that print carries meaning and reading is done from left to right, and from top to bottom (Johnston, McDonnell & Hawken, 2008). Book knowledge is one of the most complex abilities related to literacy as most Reception Year learners are usually having their first encounter with books in this locale. In order to develop book knowledge and print awareness, learners with and without disabilities should be introduced to practise holding books in a proper way and to pretend to read by turning pages (Dynia & Justice, 2015). When teaching sighted learners, teachers should point to the print during reading aloud sessions to show that print tells the story. When learners with visual impairments are taught, however, a text that is read should be in both print and Braille to enable learners to feel the dots. Hence, the teacher should improvise by making tactile books to enable learners with VI to explore explicitly by feeling the texture of Braille symbols.

Furthermore, repetitive story reading encourages learners to develop book knowledge and print awareness. Teachers are encouraged to ask learners to retell the story and role-play characters that appear in a text read using puppets, costumes and other props. In order to enable the learners with visual impairments to participate in book knowledge, the events narrated in a story should be accompanied by real objects such as a story box and tactile pictures, whenever possible (Bowyer-Crane, Snowling, Duff, Fieldsend, Carroll, Miles, Gotz & Hulme, 2007). Subsequently, teachers of visually impaired learners are encouraged to adapt and modify the materials, teaching methods and the physical setting by introducing the learners to Braille and tactile books which will enable them to feel the texture and Braille dots. Moreover, these teachers should introduce the learners to materials used to write Braille such as the Perkins Brailier, Mountbattan Brailier, slate, stylus and peg slate. In response to this, learners should be involved in role-play activities to feel acknowledged and part of the classroom.

Alphabet knowledge

Johnston, McDonnell & Hawken (2008) conducted a study that focused on enhancing outcomes in early literacy for young children with disabilities. Their findings define alphabet knowledge as the ability to detect letters and their sounds. This means that learners at their emergent literacy stage need to have knowledge of how to detect letters and their sounds in order to acquaint themselves with literacy skills. According to Kostelnik, Soderman and Whiren (2011), alphabet knowledge is about learning upper and lower-case letters, differentiating between letters, and joining them to form words. Learners who are visually impaired are not the exceptions in learning the upper and lower-case letters, but they will have to augment that knowledge of the alphabet with Braille codes. In a context where learners are visually impaired, Erin and Wright (2011) state that a capitalised letter is preceded by the Braille capital sign (dot 6). If the whole word is capitalised, dot six (6) is doubled. Phillips, Clancy-Menchetti and Lonigan (2008) articulate that in order to develop alphabet knowledge in Grade R learners who are visually impaired, an alphabet Braille box or bag could be used as a free-choice activity where each letter of the alphabet is written in Braille and each box or bag contains objects that start with the alphabet/Braille-coded letter.

Lewis and Iselin (2002) advice that to give learners with visual impairments (that is those who are blind or have low vision) first-hand experience of the letters of the alphabet, a teacher could use a six-indented muffin pan or a half dozen egg box and six tennis balls to resemble a cell from which letters are formed. They state that it is ideal for a teacher to let a learner with visual impairments make different letters of the alphabet. For instance, when making letter 'a', a tennis ball is placed in the first left column on the top of the muffin pan or egg box to resemble the dot on a slate. The remaining five holes will be empty. This activity will also be helpful in the development of visually impaired learners' fine motor skills because it involves direct hands-on activities (Bouley-Picard, 2005).

Phonological awareness

Phillips, Clancy-Menchetti and Lonigan (2008) conducted a study on successful phonological awareness instruction among preschool learners. Their findings revealed that phonological awareness is the ability to hear and manipulate the sounds in spoken words. The literacy-friendly

classroom environment offers Grade R learners plenty of opportunities to explore, manipulate, discover and imitate different sounds. Literacy-friendly environments should include various learning centres such as a library, a listening centre, a writing centre, an art centre, and a fantasy play centre (Phillips, Clancy-Menchetti & Lonigan, 2008). Phonological awareness could be developed through singing songs, playing rhythm games, reading nursery rhymes, reading storybooks, identity tasks, and syllable practice (Erickson & Hatton, 2007). Engagement in such activities assists young learners in developing their awareness that sounds have meaning and sounds are portrayed in different forms.

Early writing

Early writing is a form of communication that conveys messages from one person to another in the form of pictures, print, Braille and/or sign language (Jones, 2007). Roe, Rogers, Donaldson, Gordon and Meager (2014) state that to develop the reading and writing awareness of learners who are visually impaired, a teacher could use shared book reading and reading aloud activities. Schulz (2009) adds that language experience, shared writing, interactive writing and independent writing could be used to develop early writing skills.

Therefore, in order to introduce VI Grade R learners to early writing skills, a teacher should provide the writing materials such as real objects, tactile symbols and tactile materials books with pictures to motivate the learners. Dennis, Lynch and Stockall (2012) emphasise that the availability of various writing materials in most parts of the classroom enables Grade R learners to write for different purposes at their own appropriate time. In complex contexts, such as when learners have visual impairments, those different tactile materials such as sandpaper letters for practice and sharpening fingertip sensitivity must be provided as their reading depends mostly on fingertip dexterity. Grade R learners who are visually impaired should be provided with a variety of opportunities to write, cut, paste, copy, sequence, fill in words or letters, and rearrange sentences. All learners should be engaged in these activities. Furthermore, tools such as a slate, stylus, peg slate, Mountbattan Braille, Pac mate, Braille note-taking devices, Braille sense, Braille note and Perkins Braille (Dennis, Lynch & Stockall, 2012) should be available, and they should be allowed to scribble, doodle, trace, draw, make raised dots, lines and write like their counterparts who are sighted. Ebrahim (2011) indicates that Grade R learners learn through object manipulation, discovery, and the use of various senses, hence they are regarded as agents

of information through exploration of real and concrete objects. Learning through exploration of real objects is seen as the best way of teaching learners with visual impairments. In-service teachers should pair physical gestures with literacy through songs, poems, and chants to teach vocabulary that includes words referring to body parts and positional concepts. Concrete objects give learners with visual impairments a better understanding of the concept that is being taught (D'Andrea, 2009). Moreover, Grade R learners use their fingers to trace and write different letters on different textures and surfaces. Such activities of tracing and writing on different textures are seen as very helpful and important in developing fingertip sensitivity in learners who are visually impaired (Lewis & Iselin, 2002).

2.4 The Roles and Responsibilities of Teachers of Learners who are Visually Impaired

Paratore and McCormack (2007) state that teachers of visually impaired learners (TVIs) play an important role, as such learners are regarded as learners with special educational needs (LSEN). They state that one of the most important roles is to teach them reading and writing Braille, as it is their means of becoming literate.

TVIs teach various skills such as daily living activities and the use of adapted materials and activities. Secondly, TVIs are responsible for managing and coordinating the services the learners with visual impairments receive (Friend & Bursuck, 2012). Wamba and Dunn (2009) argue that the services should include writing and implementing an individualised educational plan (IEP). They further explain that IEPs are route maps on how the teaching and learning of a learner with a disability should take place. Such a plan includes modifications and adaptations of the activities and the curriculum. Another important factor is that TVIs have to work collaboratively with a multi-disciplinary team (MDT) that can comprise the school principal, school psychologist, counsellor, speech/language therapist, Braillist, O & M instructor, and social worker. Moreover, TVIs are responsible for adapting and modifying the activities performed in the classroom to fit the needs of learners who are visually impaired. Being visually impaired does not mean that a learner is incapable of doing daily and simple activities in the classroom (Tom, 2010; Lohmeier, Blankenship & Hatlen, 2009). Learners who are visually impaired should be involved in all activities that are taking place in the classroom, but full

description, adaptation and modification should be provided to ease the learning process of such learners (Hardle, 2007). Current practice indicates the need to “focus on the learner’s ability rather than on his/her disability” (Massof, 2009, p. 1534).

2.5 Effective Learning Environment of Grade R Learners who are Visually Impaired

Machado and Botnarescue (2011) argue that a learning environment is the place where various activities and pedagogy of teaching and learning occur and that it includes psychosocial and physical settings. They also explain that a Grade R learning environment should comprise of these developmental areas to be considered effective: language development, symbol systems knowledge, and academic and general knowledge of the environment that surrounds them. Kostelnik, Soderman and Whiren (2011) specify that an effective learning environment should entail components such as safety, comfort, space, attractiveness (texture) and mobility as additional requirements for every Grade R learning environment for learners with visual impairments. Further to this, Allen and Cowdery (2009) add that an environment is an important factor in the teaching and learning of literacy of Grade R learners, therefore it has to be language-rich, stimulating and conducive to allowing all learners to interact diversely with reading and writing concepts.

A physical environment should cater for all learners’ abilities and suit the ages of learners in a group. Zones for various functions to create a welcoming classroom environment that accommodates the many interests of learners should be set up (Kostelnik, Soderman & Whiren, 2011). Learners with visual impairments need a free-flowing space with tactile and musical toys and pictures with texture (attractiveness) because these are the stimuli that assist them to understand the space they are in. The teaching and learning environment of these learners should also comprise of pictures with texture and sometimes sound or music to enable them to explore extensively by touching and listening, as these are the most important senses in their lives. In a Grade R classroom there should be different spaces such as private space, small group space and large group space where learners will interact with literacy concepts in their own appropriate times (Machado & Botnarescue, 2011). It is advisable that, for an appropriate teaching and

learning environment in the Grade R classroom, it should be obstacle free to allow independent mobility/movement for learners with visual impairments (Allen & Cowdery, 2009). Learners with visual impairments should be given opportunities for repeated exposure to any activity done in the classroom to become meaningful. They also need to be oriented about the school surroundings and classroom to familiarise them with the school facilities such as toilets, the classroom physical setting, and storage spaces for materials (Cushman, 2013; Friend & Bursuck, 2012).

Cushman (2013) and Friend and Bursuck (2012) advise that there should be reachable textured and sound labels in the environment which will help learners with visual impairments to locate themselves with ease. These O & M training skills help the learners with visual impairments to locate themselves in space and to be able to move independently from one place to another. They also advise that during relocation of classroom materials, learners with VI should be involved so that they will acquire the knowledge that the object can be put in different places but still remain the same object. They further add that if any alteration has been made in the classroom setting and materials storage areas, learners who are visually impaired should be informed and re-oriented so that they will efficiently interact with the immediate environment without difficulty. Cushman (2013) emphasises the importance of involving family members in the discussion of items in the environment that need to be labelled and which symbols to use. She further states that similar symbols should be used in school and at home to reinforce the literacy concept.

Classroom and school orientation is of vital importance. This helps learners with visual impairments to have a clear picture and spatial landmarks of their classrooms and physical settings and it will enable them to locate their desks and others' desks easily. Orientation and mobility should be a teaching and learning priority in which literacy can be incorporated. It is important for all multi-disciplinary team (MDT) members to be involved in the planning process (Cushman, 2013; Argyropoulos, Sideridis & Katsoulis, 2008). The MDT members should locate the places to be labelled such as lockers, desks, the lobby and other places a learner often visits such as the gym, library, staffroom, and many more. Friend and Bursuck (2012) further allude that there must be enough natural light in the classroom. Further to this, the classroom should have large windows that should allow natural light to penetrate through. Dennis, Lynch and Stockall (2012) stipulate that a well-lit classroom helps sighted learners to view pictures and text

clearly. Moreover, Grade R teachers of learners should structure the classroom setting in such a way that learners have enough space to interact with their peers, whether they are sighted or visually impaired. The learning activities should also cater for the different learning styles of all the learners in the classroom. The desks, storage spaces and learning materials should be adjusted to meet the needs of learners who are visually impaired (Murphy, Hatton & Ericson, 2007). An effective learning environment should comprise of play centres that have been well-arranged and that accommodate learners' various needs.

2.6 Planning Teaching and Learning Activities

Effective teaching has to commence with proper planning of each lesson. By understanding learner characteristics and teaching strategies appropriate for each learner, teachers can easily use multisensory instruction and integrate support and activities for diverse learners into regular classrooms and identify technologies that could be beneficial to support specific curricular goals and objectives (Ertmer & Ottenbreit-Leftwich, 2010). The latter authors contend that a teacher has to specify how technological tools will be used to assist learners achieve and demonstrate the goals and objectives of the curriculum. Hew and Brush (2007) argue that the use of technology in teaching and learning improves learners' creative thinking, self-concept formation and motivation. It further helps learners to communicate with one another from various geographical locations. Kostelnik, Soderman and Whiren (2011) allude that effective planning enables teachers to notice teachable moments when they arise, to teach learners (including learners with VI) starting from the known (prior knowledge of learners) to the unknown (Vygotsky, 1978), to use concrete to abstract objects, and to engage in exploratory to self-directed and simple to complex activities.

Planning is preparation that enables teachers to map what is to be taught, how it is to be taught, and how learning is to be assessed (Chapman & King, 2005). They further state that planning should take cognisance of the individual, cultural, physical, intellectual, social and emotional development of all the children in the classroom. When planning teaching and learning activities, teachers have to consider the following four important areas:

Content

Wood (2013) defines content as the concept that has to be covered in a syllabus or curriculum. She further indicates that a teacher has to break the content into small teachable units and consider learners' prior knowledge, diverse learning styles and their cultural backgrounds. Once again, a teacher has to modify what s/he is teaching in order to help all learners attain knowledge, skills and competencies. Content should be adapted to the level of each individual learner.

Instruction

Lynch and Waner (2008) stipulate the importance of differentiated instruction in planning the teaching and learning activities. They describe differentiated instruction as “incorporating activities that meet the varying learning needs of individual learners to ensure that all learners access the curriculum” (p. 15). In a classroom situation, teachers have to cater for all learners even if they all use Braille. The fact is their learning styles and abilities differ due to a set of reasons such as the on-set of the disability, socio-economic factors, degree of the disability and, above all, they are unique individuals who learn differently (Brambring, 2006).

Classroom environment

Classroom environment is a teaching and learning setting that includes psychological, social and physical factors that shape the learning environment (Machado & Botnarescue, 2011). Gurney (2007) adds that an effective classroom is a classroom of opportunity and experiences where learners can learn on their own. He further extends that various centres in a classroom environment promote opportunities for learners to discover, manipulate and learn on their own. He adds that a classroom environment should be secure to allow learners to cooperate, develop respect for one another, implement their curiosity to explore and manipulate, gain confidence in their ability to figure things out on their own, and thus become independent in their literacy learning. Dennis, Lynch and Stockall (2012) stipulate that the classroom environment should be arranged in such a way that it is culturally responsive to all Grade R learners and that it will enable them to come into contact with literacy concepts during preschool routines such as circle time, shared book reading and free or fantasy play. Grade R learners should see their cultures being reflected in the classroom setting. Moreover, they should be able to experience other

learners' cultures and consequently construct knowledge about their surrounding environment (Paratore & McCormack, 2007).

They emphasise that the literacy materials should be placed all over the learning centres such as dramatic play centre, library centre, block centre, snack table centre, art centre, and a small and large motor activity centre to enable Grade R learners to view and use those materials at their own spare, recreational and leisure time. Day, McDonnell and Heathfield (2012) show that library centres help Grade R learners to interact with books and stories which are helpful in the development of alphabet knowledge and print directionality, which are literacy concepts. This means Grade R learners will become aware that books contain letters of the alphabet which form words, sentences and even paragraphs. For the learners with visual impairments there should be tactile books.

They further indicate that library centres assist Grade R learners to be aware that books are written from top to bottom and from left to right. Grade R learners who are visually impaired have an important sense that is missing, thus it is advisable that any action or instruction that takes place should be short, specific and words that are used should not generalise (Lueck, Dote-Kwan, Senge & Clarke, 2001). For instance, a teacher is supposed to give a specific instruction: "Bring me a glass of water" instead of saying, "Bring some water". They suggest that a teacher should call and teach other school members to call a learner by his or her name so that a learner will identify his classmates' and other school members' voices. Furthermore, there should be peer interaction, teacher-learner interaction, small group interaction or large group interaction to enhance the communication and social skills of learners who are visually impaired (New South Wales Department of Education and Training, 2006).

A teacher should use dialogic shared reading to enhance learners' conversational skills (Murphy, Hatton & Erickson, 2008). They further extend that during dialogic shared reading, a teacher should allow the learners who are visually impaired to point to the directions which appear in the text. The teacher should also encourage discussion among learners. Barclay (2014) encourages teachers to use reading aloud on tape, silent reading, and reading aloud in chorus to improve the oral language of learners who are visually impaired. Facella, Rampino and Shea (2005) suggest that stories with one repetitive phrase or sentence could be used in different learning centres to improve learners' oral language.

Auditory learners learn best through discussion, reading aloud, and discussions in small and large groups. It is therefore very important that in-service teachers engage such learners in debates, dramatic role-play, spelling bees (spelling words orally), and listening to stories recorded and then retelling the story (Lewis & Iselin, 2002). Developing auditory skills is beneficial in teaching learners who are visually impaired. Teachers should bring objects making various sounds to the classroom and enable the Grade R learners who are visually impaired to detect, identify and name the sound made by the object. This activity should be done in a classroom with no unnecessary distractions to allow them to use their listening skill effectively. In cooperative learning, learners are able to share their views and operate within their zones of proximal development (Vygotsky, 1978).

In-service teachers have to arrange their classrooms in such a way that it will accommodate diverse cultural and linguistic learning; thus teachers have to know their learners and their context. In this regard, Shulman (1987) indicates that it is important for a teacher to possess learner and context knowledge which will facilitate the planning of appropriate activities and assessment. Grade R learners with visual impairments should not be exempt from being introduced to interact with books in order to gain alphabet, Braille and directionality knowledge like their sighted peers. Barclay (2014) indicates that circle time is a most important time for Grade R learners. It is during these sessions that curricular concepts are introduced, socialisation is enhanced, and when children learn to take turns. Consequently, Grade R learners with visual impairments should be part of these opportunities to develop their essential social cognitive skills along with their peers.

Materials and tasks or activities

Samuelsson and Johansson (2006, p. 48) indicate that “materials are any item, tool or piece of equipment used to assist the lesson before, during or after instruction.” Machado and Botnarescue (2011) postulate that the activities planned should provide an active exploration linked to learners’ prior knowledge that occurred outside classroom experiences. Additionally, teachers should be clever enough to be observant of learners’ interests and concerns in their surroundings, and for this reason they should use the ‘three-W’ strategy when planning the

activities. Three-W strategy includes what is known by the learners, what is unknown but can be known, and what needs to be learned. This strategy is seen as an easy way of involving learners in their everyday learning (Machado and Botnarescue, 2011).

The materials selected by teachers should be based on learners' readiness, interests and learning styles, and they should choose materials that are culturally responsive to all learners in the classroom (Samuelsson & Johansson, 2006). Teachers have to adapt materials for visually impaired learners such as using a video recorder to record conversations and reading stories to enable learners who are visually impaired to listen to them again in their own time. They can also use tactile materials such as salt, sand trays, and pudding for learners to trace and write, which will improve their fine motor skills. Hands-on activities such as games and puzzles could be used to teach a certain literacy concept and also to reinforce skills.

Rusznyak and Walton (2011) suggest the use of 'scaffolding'. They explain that scaffolding is a process that assists learners during the early years of development as support is gradually reduced; this enables the child to eventually take full responsibility for his/her learning. Teachers therefore have to scaffold activities by starting from the known and moving to the unknown and making sure that they work within learners' 'zone of proximal development' (Vygotsky, 1978, p.35) to enable all Grade R learners, including those with disabilities, to finish a given task. They also have to provide real and concrete learning aids whenever possible that require a direct hands-on approach and they have to contextualise the content of lessons to reflect the learners' diverse cultural backgrounds.

2.7 The Importance of Learning Braille in the Lives of Learners with Visual Impairments

Massof (2009) stresses the vital importance of learning how to use Braille by learners with visual impairments. He states that Braille opens the doors to education, employment opportunities and enables learners who are visually impaired to interact with language independently in their own appropriate time and space.

Tom (2010) further notes that Braille defines literacy. Braille has been accepted globally as the means of written communication for people who are blind. So anyone who can read and write

Braille is deemed literate, whereas a visually impaired person who cannot read and write Braille is considered illiterate by the community of people who are sighted, even if a person can use assistive devices properly. He further states that Braille gives learners who are blind a sense of privacy, confidentiality and independence because they will be able to label their own belongings and read and write on their own without anyone having to intervene in their private life. Moreover, Braille upholds the rights of the blind. Being able to read and write in Braille supports the right of the visually impaired to information; for example, they will have knowledge about current affairs because they can access printed texts that have been converted into Braille code. A learner who is visually impaired has to learn to read and write Braille manually before learning to use assistive technology or devices such as the Mountbattan Brailier. Likewise, sighted people have to learn how to read and write print characters before learning how to use a computer. Braille is important for visually impaired people to access culture and entertainment, and Braille gives learners who are blind the option to read books and publications. By using Braille, they can enjoy reading independently. Virtually any material that is written in Braille can be converted into print, and print can be converted into Braille.

Braille is not only an effective means of communication, but it is a proven avenue for achieving and enhancing literacy for learners who are blind or have significantly low vision (Pierce, 1996). As a result, various countries have advocated the inclusion of all learners in their respective school settings, regardless of their disabilities (Russell & Airasian, 2012). In this regard, DoE, (2001) South Africa's Education White Paper 6 indicates that all schools should accommodate and acknowledge all learners from diverse cultural backgrounds, including those with different disabilities and abilities. This means that learners with disabilities should be educated in the same classrooms as their 'non-disabled' counterparts of the same age. It further illustrates that literacy is a principal factor in the education of all learners, irrespective of their abilities or disabilities. Legislative support for this approach was entrenched as far back as 1990 in the Individuals with Disabilities Education Act of 1990 (IDEA) (SA, 1990) which requires that preschool children with disabilities should get a free and equal education just like their 'non-disabled' counterparts. As a result, learners with visual impairments also need to know how to read and write, regardless of the disability they have. Moreover, the implication is that they have to attend community schools and not be isolated from their siblings and peers.

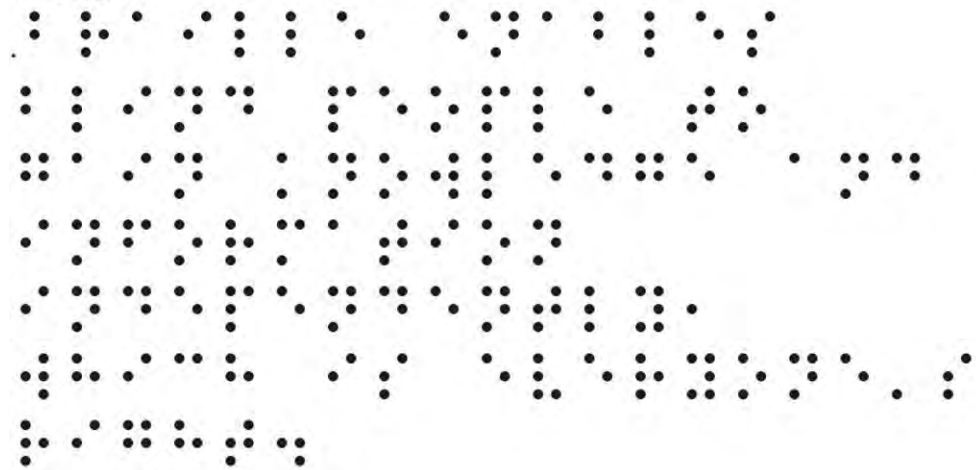
Kamei-Hannan and Sacks (2012) stress that Braille is a primary tool for reading and writing for learners who are visually impaired as far as literacy is concerned. Many technologies have been designed for the use of people who use print, yet those technologies have not diminished the use of print. Conversely, Braille inventors have implemented advanced technologies such as speaking devices, audio books, and a screen reader. However, none of these technologies can replace Braille because if those advanced and assistive technologies or devices are unavailable, a learner with visual impairments will be deemed illiterate in the environment of people who are sighted. This means that it is essential that teachers of the visually impaired are knowledgeable on how to read and write Braille manually and also on how to operate the assistive technologies that can be used to teach literacy to learners with visual impairments.

Simpson (2013) alludes that Braille is a code used by people who are blind or have low vision who cannot benefit from printed materials. He further illustrates that they use it as a means of communication to read and write. Additionally, Braille readers are not learning a new language but they learn an association between patterns of raised dots and corresponding letters, numbers, whole words and punctuation marks. Swenson (2005) further elaborates that Braille has two ways of writing: grade 1 Braille (alphabetic or uncontracted Braille) and grade 2 Braille (contracted Braille). In grade 1 Braille, every letter of each word is expressed like in print and it is mostly used by beginners, whereas in grade 2 Braille cells are used individually or in combination with others to form a variety of contractions or whole words. For example, the word 'like' is represented by letter *l* in grade 2 Braille.

Many researchers are still debating whether to start teaching literacy using alphabetic Braille or contracted Braille. Presently there is no research that supports the superiority of one approach over the other (Seymour-Ford, 2002), and therefore teachers could introduce their learners to either grade 1 or grade 2 Braille because either is still acceptable. Below is an illustration of the sentence: "Braille enables blind people to gain knowledge and information independently, which is everyone's right" (Seymour-Ford, 2002, p. 5). It is written in both grades 1 and 2 Braille respectively. In grade 1 Braille every letter is written as in print and this occupies many Braille cells, whereas in grade 2 Braille there are abbreviations such as *bl* for *blind* and *brl* for *Braille*; word-signs such as *K* which represents the word *knowledge* and *P* for *people*; and group-signs such as *ever* in *every*, and *en* and *ble* for *enables* (Royal National Institute for the Blind, 1992).

Braille enables blind people to gain knowledge and information independently, which is everyone's right.

Grade 1



Grade 2

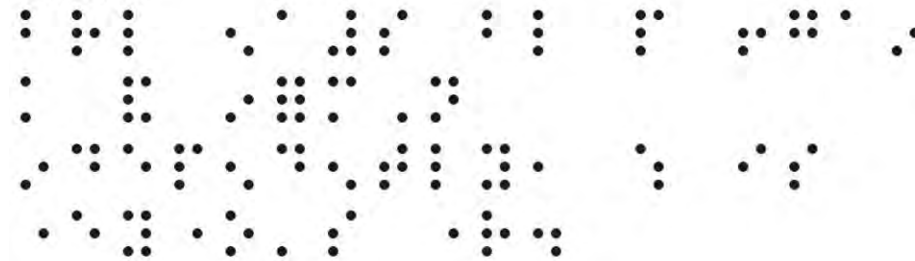


Figure 2.1: Uncontracted grade 1 and Contracted grade 2 Braille codes

Swenson (2005) states that learning Braille is very challenging because one has to write from right to left when using the oldest technology slate and stylus, whereas the writing of print starts from left to right. However, it is interesting to read and feel the tactile code that is “talking to the fingers in the language of the eyes” (Massof, 2009, p. 1529). Braille learners learn to read and write using tactile code instead of printed characters (Kamei-Hannan & Sacks, 2012). Therefore, teachers have to be knowledgeable and creative to develop the activities that will allow Grade R learners to manipulate and use their fingers more often to sharpen finger sensitivity. In elaboration, Erin and Wright (2011) state that “Braille uses six dots arranged in two columns each containing three dots and that is called a Braille cell. On the first column the dots are numbered one to three beginning at the top and four to six beginning at the top of the second column. Letters are formed by raising some dots that will represent the letters of the alphabet, for

instance letter *a* is encoded by raising only dot 1, *b* is encoded by raising dot 1 and 2, a space is represented by an empty cell with no dots raised” (Massof, 2009, p. 1530). Below is an illustration of Braille letters of the alphabet where the thick, big dots show the raised dots for each letter of the alphabet.

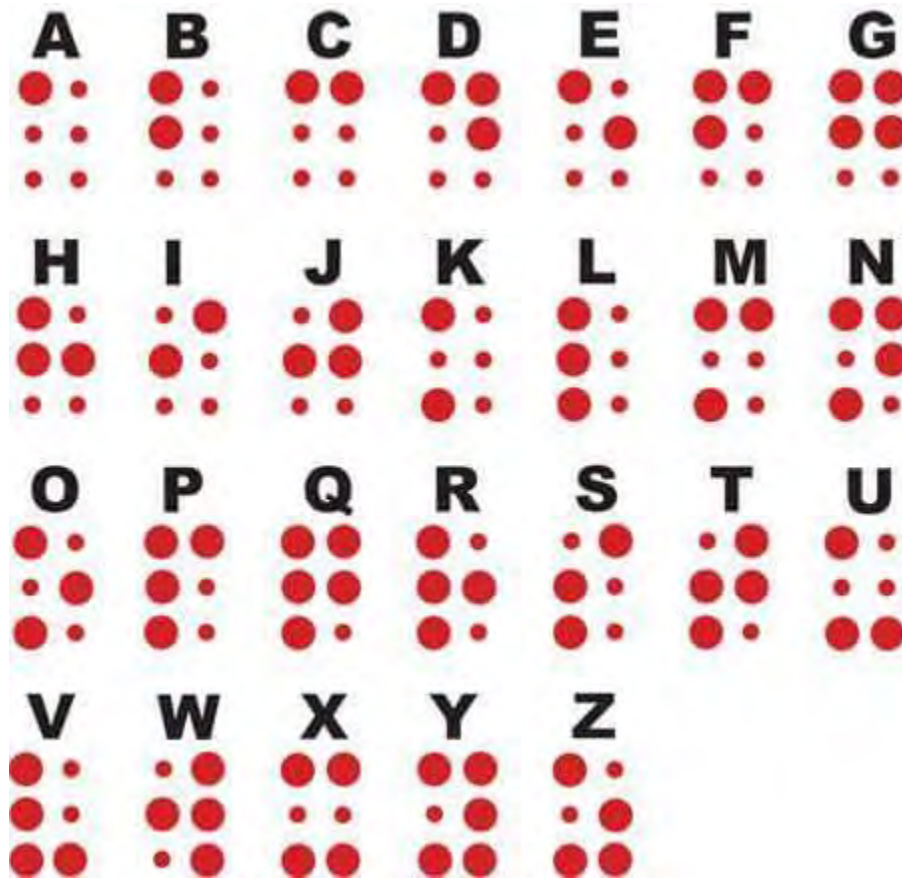


Figure 2.2: Braille Letters of the Alphabet

Swenson (2005) notes the vital importance of using Braille to teach literacy to learners who are visually impaired. She states that being able to read and write in Braille helps learners with visual impairments to work independently at employment sites and in society at large. As a result, they gain self-esteem and confidence. They also gain a sense of privacy and belonging because they can read and write on their own without asking anyone to intervene with their personal matters. She also points out that teaching Braille means teaching reading. Braille and reading are attached to each other and they are inseparable. Braille has the concepts of reading which should be developed in the early years. Grade R learners who are visually impaired should

also learn how to read and write using Braille as their basic human right to information and equal education and as a way of becoming literate (Jolley, 2008).

2.7.1 Braille Tools

Both old and advanced tools are used to write Braille code. Tools that are used to write Braille are the stylus, Braille paper and slate (these are similar to a pen or pencil and exercise book that sighted children use).

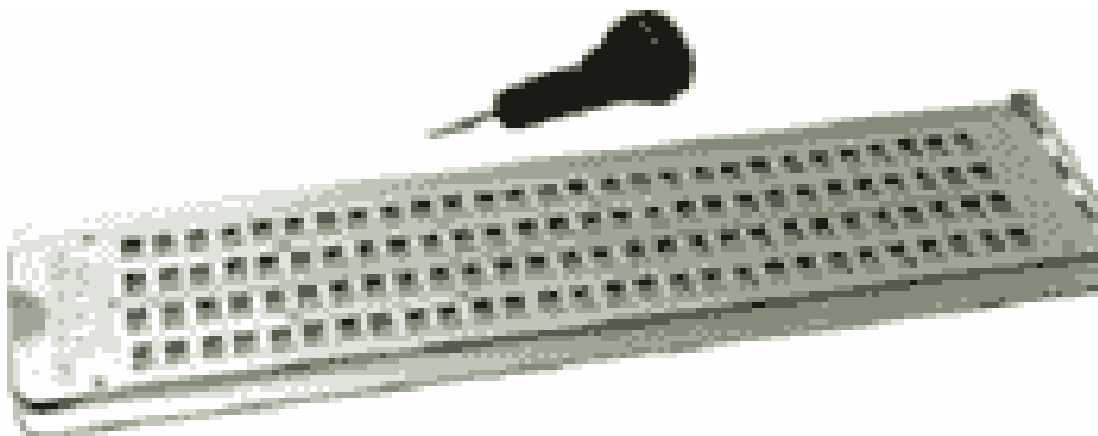


Figure 2.3: Picture of Slate and Stylus

A stylus is used to punch the dots on the slate. Walhof (2010) explains that other tools are also used for writing Braille such as the Perkins Brailier (this is like a typewriter the only difference is that it has only six keys which are associated with the Braille cells, a space bar, a backspace key, a carriage return and a line feed, unlike a typewriter which has numerous keys).



Figure 2.4: Perkins Brailier



Figure 2.5: Mountbattan Braille

The third tool is a Mountbattan Braille. This is an electronic Braille writer, note-taker and embosser. According to Walhof (2009, p. 10), it “integrates modern computer technology and has applications to support embossing, reading and file storage and it has audio support for all its operations. It is an adaptive technology that is intended to meet the needs of blind students in today's digital age environment, especially in early Braille instruction, as a foundation tool for literacy.” Therefore Grade R learners with visual impairments should be introduced to the above advanced tools to improve their thinking ability and to develop, through Braille communication, good relationships with their peers. Technology integration encourages vocabulary development and the use of technology jargon such as monitor, disc, keyboard, cursor, backspace key, space bar, backspace key, a carriage return and a line feed (Jackman, 2005).



Figure 2.6: Perkins Smart Braille

The fourth tool is the “Perkins Smart Braille which has a small video screen attached to the front of the Braillewriter that displays SimBraille and large print, combined with audio feedback. It allows users to edit, save and transfer electronic documents via USB” (Pierce, 1996). Other tools are also used to write Braille such as Braille note-taking devices: Braille Note, Pac Mate and Braille Sense. Walhof (2009) states that although there are numerous advanced technologies used to write Braille, the use of slate and stylus still remains a portable, easy to carry, affordable

and convenient tool to take notes in the classroom and at meetings or workshops, especially in developing countries. Teachers of the visually impaired are supposed to have technology knowledge so that they will integrate literacy, Braille codes and technology in their teaching. Moreover, they are supposed to be trained in the use of Braille tools so that they will use them effectively when teaching literacy.

2.8 Barriers to Effective Teaching and Learning of Literacy

Effective teaching and learning of literacy using Braille is hindered by various factors, some of which are extrinsic while others are intrinsic. This section presents a discussion of the barriers to effective teaching and learning of literacy using Braille.

Dunn, Craig, Favre, Markus, Pedota, Sookdeo, Stock and Terry (2010) postulate that insufficient funds for training teachers about lesson plans that contain differentiated instruction, individualisation, multiple intelligences, and responsiveness to learners' learning styles is one of the barriers to effective teaching and learning of literacy using Braille. Schulz (2009) found that teachers' background and training did not prepare them to deal with newly arrived students to develop English language skills quickly while simultaneously learning other subject matter and overlapping their English language skills with Braille concepts. Moreover, outdated teacher education and staff development programs did not prepare teachers to deal with the unique needs and complexities of the visually impaired. Simpson (2013) argues that the Education Department does not provide sufficient, if any, refresher workshops to update in-service teachers on the amendments and adaptations done in Braille codes.

A study by Helfrich and Bosh (2011) found that many teachers who taught Grade R had not received professional training related to early childhood education and, if they had received training, it didn't involve dealing with diverse learners who require differentiated methods of instruction and assessment. In addition, Khong and Saito (2014) indicate that teachers lack training on learner-centred instruction and its implementation. They further allude that a 'one size fits all' approach is no longer applicable and effective in technology-enhanced, learner-centred classrooms, especially in Reception Year classes. They extend that most of the training

on technology excludes Reception Year learners and that training for these teachers is not subject specific.

An and Reigeluth (2011) show that in most countries the national curriculum is focused mainly on test scores and not on a learner-centred approach. They contend that the teacher-learner ratio does not allow the use of a multisensory approach when there are too many learners in one classroom (Mariga & Phachaka, 2011). When classrooms are overcrowded with many learners, the use of learning centres and free movement are prevented. Teachers play a critical role in the education of learners who are visually impaired. Providing quality pre-service and in-service teacher training programs is therefore crucial in order to create better learning experiences for learners who are visually impaired in their struggle to combine the development of their 'new' English language and Braille codes. The lack of these programs creates a significant challenge for literacy teachers of the visually impaired who have to cope with fewer concrete support materials to support learners.

Technology used by teachers is sometimes not related or linked to student learning outcomes (Ertmer & Ottenbreit-Leftwich, 2010). They further allude that technology integration requires pre- and in-service teachers to possess technology literacy if they want their learners to be technology users in this digital age. In addition, technology integration needs both pre- and in-service teachers to access the use of technology tools themselves. When teachers use such tools to teach content, they enable visually impaired learners to access difficult concepts with ease, which in turn results in the achievement of meaningful student outcomes.

Grade R in-service teachers have to be technology literate to teach reading and writing. For example, they need to know how to use the Mountbattan Brailier which is an electronic Braille writer, note-taker and embosser. It integrates modern computer technology and has applications to support embossing (raising dots), reading, and file storage and it has audio support for all its operations. It is an adaptive technology that is intended to meet the needs of blind students in today's digital age, especially in early Braille instruction, as a foundation tool for literacy. The lack of specific technology knowledge and skills, technology-supported pedagogical knowledge and skills, and technology-related classroom management knowledge and skills has been

identified as a major barrier to technology integration in teaching and learning (Hew & Brush, 2007).

2.9 Theoretical Framework

Koehler and Mishra's theory of teachers' knowledge of technology integration was used as a theoretical framework for this study. Koehler and Mishra's theory of technological pedagogical and content knowledge (TPACK) (2009) was also used. Due to the nature of this study where the use of Braille and Braille tools was seen as effective strategies for teaching literacy to learners with visual impairments, TPACK was regarded as a suitable theory to frame my study. Koehler and Mishra's theory is built on Lee Shulman's construct of pedagogical content knowledge (PCK).

Koehler and Mishra (2009) articulate that there are three main components of teachers' knowledge of technology integration in their theory of technological pedagogical and content knowledge (TPACK). These components are: content, pedagogy and technology. Content Knowledge (CK) is knowledge of the subject matter that has to be taught or learned in a particular grade (Shulman, 1987; Mishra & Koehler, 2006). In my study, it was expected that the in-service teachers would have knowledge of important concepts, skills and facts of Literacy as a fundamental subject in the Foundation Phase. Knowledge of content is essential for all teachers in the teaching and learning profession. Thus, Grade R in-service teachers are no exception as they have to be knowledgeable about Literacy as a subject.

The second component of TPACK is pedagogical knowledge. Pedagogical knowledge (PK) is a teacher's knowledge of teaching and learning methods, practices and processes that are used in order to construct knowledge (Ball, Thames & Phelps, 2008; Shulman, 1986; Mzimela, 2012). In-service teachers need to be knowledgeable of the diverse learning styles of the learners in their classrooms and they need to be able to design teaching strategies that will enhance their teaching. Knowing that learners are from diverse cultural and linguistic backgrounds will enable in-service teachers to employ various teaching strategies. Such strategies should be included in their planning (Koehler & Mishra, 2009). Moreover, knowing learners' diverse learning styles enables teachers to plan differentiated lessons (i.e., instruction) that should consider individual learners' readiness, interests and profile.

The third component of this theory is the knowledge of technology. Technology knowledge (TP) is knowledge about “standard technologies such as books, chalk and blackboard, and more advanced technologies such as the Internet and digital video” (Mishra & Koehler, 2006, p. 1027). In-service teachers are to be knowledgeable of the standard Braille technologies for learners who are visually impaired, such as the Braille stylus, slate, the Perkins Braille, and advanced technologies such as the Mountbattan Braille, the Perkins Smart Braille, and other Braille note-taking devices. They should also overlay their knowledge of technology with knowledge of how to operate those technologies while teaching Literacy to visually impaired Grade R learners.

Shulman (1987) highlights one of the most significant kinds of knowledge that every teacher should possess, as it is at the intersection of CK and PK. He speaks about pedagogical content knowledge (PCK). PCK is “knowledge of pedagogy that is applicable to the teaching of specific content” (Koehler & Mishra, 2009, p. 64). In-service teachers are to be knowledgeable of the subject content (i.e., of Literacy as a subject or learning area), find different ways to represent that subject content, and make adaptations and tailor their teaching and learning materials and activities to the needs of their learners. They further allude that technological content knowledge (TCK) is an understanding of the manner in which technology and content constrain one another. In-service teachers have to master the subject matter when they teach Literacy. Moreover, they also need to have a deep understanding of how subject matter can be adapted and augmented by the application of Braille and related technologies. Thus, technological pedagogical knowledge (TPK) is an understanding of how teaching and learning can change when particular technologies are used in particular ways.

Koehler and Mishra (2009, p. 66) further define technology, pedagogy and content knowledge (TPACK) as “the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts easy or difficult to learn and how that technology can help redress some of the problems that learners face; and knowledge of learners’ prior knowledge.” To use technology to support meaningful student

learning, teachers need additional knowledge of the content they are required to teach, the pedagogical methods that facilitate student learning, and the specific ways in which technology can support those methods (Ertmer & Ottenbreit-Leftwich, 2010, p. 37). This means that in my study in-service teachers were expected to have additional knowledge of how to use different Braille technologies in teaching literacy to young learners who were visually impaired. Teaching with technology requires teachers to expand their knowledge of pedagogical practices across multiple aspects such as planning, implementation and assessment processes.

2.10 Conclusion

This chapter dealt with the literature that I reviewed in order to explore in-service teachers' knowledge of using Braille to teach literacy to visually impaired Grade R learners. I discussed Literacy teaching and learning in diverse Grade R classrooms and literacy-related concepts and activities. I further discussed the roles and responsibilities of teachers of learners with visual impairments. The literature was also reviewed in terms of the requirement for an effective learning environment for Grade R learners with visual impairments and the necessity for the effective planning of teaching and learning activities. I extended my discussion to include the importance of learning Braille in the lives of learners with visual impairments, particularly those who are totally blind. I also illuminated the barriers to effective teaching of Literacy using Braille. In conclusion, I discussed the theoretical framework that underpinned this study. The next chapter will present a discussion on the research methodology employed in this study.

Chapter Three

Research Design and Methodology

3.1 Introduction

This chapter presents the research design and methodology that were utilised in the generation of data that were targeted to provide findings that would respond to the research questions. This chapter is divided into five categories. First, it exposes the research paradigm that underpinned my study. The second category addresses the approach that was employed to facilitate the study. Third, I illuminate the case study methodology that was adopted for the sampling procedures. The fourth category presents the data generation tools that were utilised in this social science research project in order to gather empirical data that were later analysed for the procurement of empirical evidence on the generated data. The fifth category comprises a discussion of the credibility and trustworthiness of the study by elucidating the ethical issues that were considered when undertaking this study; the limitations encountered in the study field; and the manner in which the issues that were encountered were resolved. Finally, a summary of the entire chapter is presented.

3.2 The Research Design

3.2.1 Research Paradigm

Research paradigm is “a way of thinking, viewing, describing and doing things” (Cohen, Manion & Morrison, 2011, p. 10). These authors further allude that different researchers view the world in various ways. It is therefore through this view of the world in different ways that researchers decide on selecting a particular paradigm. In support of this argument, Hennink, Hutter and Bailey (2011, p. 35) define a paradigm as “a net that comprises the researcher’s epistemological, ontological and methodological assumptions.” ‘Ontology’ refers to what a researcher thinks reality looks like and how s/he views the world; ‘epistemology’ refers to the nature of how knowledge is known; while ‘methodology’ focuses on how the researcher attains knowledge

about the world and how the data are generated. Having considered the paradigm assumptions, I found the interpretive paradigm befitting to my study because I believed that multiple realities could be constructed from in-service teachers' interpretations with regards to using Braille to teach literacy to visually impaired Grade R learners.

Moreover, the interpretive paradigm was employed because it allows the exploration of human behaviours, beliefs and past experiences (Cohen, Manion & Morrison, 2011). Its aim is therefore to understand and describe how people make meaning of their experiences and actions and how they interpret their real-world situations. Therefore, I engaged in direct, face-to-face conversations with three Grade R in-service teachers in order to understand how they interpreted their real situation in using Braille to teach literacy to visually impaired Grade R learners. In this context, I allowed the respondents to describe and explain the experiences they encountered in an uninterrupted manner. I also observed how they interacted with their learners while they used Braille to teach literacy to these visually impaired children.

The ontology of interpretive researchers' belief is that there are sets of realities or truths about the world (Creswell, 2013). Flick (2006) argues that researchers cannot know the true nature of the world; rather, they can only get closer to the truth. Therefore, through their various experiences and the socio-economic and diverse backgrounds of the respondents, their interpretations and understanding concerning their knowledge of teaching literacy enabled me to get different responses in regard to their teaching of literacy to visually impaired Grade R learners. Additionally, the epistemology in this paradigm is inter-subjective knowledge construction. Thus the participants and I constructed knowledge through interpretations and consensus was pursued through dialogue, as suggested by Bertram and Christiansen (2014).

I visited the Grade R in-service teachers at their workplace where I engaged them by asking open-ended questions and probing in order to get an in-depth understanding of the knowledge they had with regards to using Braille to teach literacy to visually impaired Grade R learners. To

validate my interpretations of the data, I took the transcribed data back to the individual participants to clarify, rectify and confirm whether what had been written was a true reflection of what they had said and done. This enabled me to construct knowledge and reach consensus with regards to their teaching of literacy using Braille. Cohen, Manion and Morrison (2011) refer to taking back the transcribed scripts as “member checks”. This study was underpinned by an interpretive paradigm because I anticipated different responses because of the different experiences and socio-economic backgrounds of the respondents, and I envisaged that this would probably result in different understandings regarding the teaching of literacy using Braille. These different sentiments and perspectives produced rich data that facilitated an in-depth understanding of the phenomenon under study.

3.2.2 Qualitative Research Approach

This study adopted a qualitative approach to social science research. According to Creswell (2009), a qualitative approach is grounded in a naturalistic setting of the phenomenon that is under study. Therefore, researchers using this approach are likely to generate data in the field where the participants experience the issue or problem under study. In addition to this, Creswell (2013) articulates that in this approach a researcher is regarded as a key instrument because he or she is the one who generates data through the use of various data generation tools. In elaboration, Hennink, Hutter and Bailey (2011, p. 89) define a qualitative approach as “an approach that allows one to study people’s experiences in detail in their natural settings, by utilising a specific set of research methods such as in-depth interviews, focus groups, observation and content analysis.” They further state that qualitative researchers identify how people’s experiences and behaviour are shaped by the context of their lives such as the society, economic reality and cultural environment in which they live. Qualitative research also seeks to understand and embrace the contextual influences that impact the research issues.

An important qualitative approach factor is that qualitative research does not include numerical data generation (Murray & Burglar, 2011). In this context, the empirical data that were generated from the research site where Grade R in-service teachers taught were interpreted qualitatively

using only words. No numerical and/or statistical data were procured. The respondents' engagement in socially constructed meanings allowed me an ample opportunity to understand how these Grade R in-service teachers interpreted their real world of teaching using Braille to teach literacy in a naturalistic manner. Henning (2005) affirms that a qualitative approach allows the researcher to talk to the participants directly at their place of work to obtain a complex, detailed understanding of the problem that is being explored. For this reason I visited the three Grade R in-service teachers at Bartimia Primary School. My intention was to gain thick descriptions of their knowledge of using Braille to teach literacy to visually impaired Grade R learners. I therefore conducted face-to-face interview sessions in which I asked open-ended and probing questions in order to obtain an in-depth understanding of their lived experiences with regards to teaching literacy to visually impaired Grade R learners.

Classroom observations of real-life teaching of literacy also assisted me in eliciting a deeper understanding of the respondents' knowledge of using Braille to teach literacy to visually impaired Grade R learners. The data that were generated were further validated by the process of triangulation. I used the opportunity to examine the documents that the respondents used in their teaching of literacy to validate the data that were obtained during the interview and classroom observation sessions.

3.2.3 Research Methodology

My study employed a case study approach as the research methodology of choice. The underlying intention was to reach in-depth understanding of how effectively in-service teachers used Braille to teach literacy to visually impaired Grade R learners. In this case study I visited the respondents at their place of work where I observed them during their real teaching of literacy. Rule and John (2011, p.18) explain that a case study is "a systematic and in-depth study of one particular case in its context." They further state that case studies "are generally descriptive in nature as they describe 'what it is like' to be in a particular context" (p. 18). Yin (2009) states that there are different kinds of case studies. He states that there is an exploratory case study, an expository case study, an ethnographic case study, and multiple case studies. My

study adopted an exploratory case study approach in order to obtain a deeper understanding of how in-service teachers used Braille to teach literacy to visually impaired Grade R learners. Rule and John (2011, p. 8) state that “an exploratory case study examines a phenomenon that has not been studied. It can lay the basis for further studies as it attempts to explain what happens in a particular situation and why it happens.”

I deemed this methodology suitable for my study because my focus was to obtain in-depth understanding on how in-service teachers’ knowledge of the teaching of literacy influenced the manner in which they actually taught literacy to visually impaired Grade R learners, with specific reference to the use of Braille. This approach also allowed me to gain insight into the experiences and challenges that were faced by the respondents in their real-life context (i.e., the school where they taught). The case study involved one school where three in-service teachers who taught Grade R visually impaired learners were interviewed and observed, and where their lesson plans and Literacy and Braille syllabuses were perused and analysed to enhance the trustworthiness and validity of my study.

In Chapter two I indicated that Koehler and Mishra’s theory of teacher knowledge of technology integration underpinned the generation of the data required for this study. Koehler and Mishra (2009) identify six ‘knowledges’ that they regard as essential for every teacher to possess when using technology. They further explain that technology could be analogue or digital, old or new. Technology could be anything such as a chalkboard, pen, the Internet, or a computer if it will assist a teacher to facilitate instruction properly. In my study the technology referred to is the use of Braille and Braille tools. Teacher knowledge required for technology integration comprises content knowledge, pedagogical knowledge, pedagogical content knowledge, technology knowledge, technological content knowledge, and technological pedagogical knowledge (Mishra & Koehler, 2006; Koehler & Mishra, 2009).

3.2.4 Sampling of the Research Participants

Sampling refers to the decision the researcher makes about which people, settings, events or behaviours to include in the study (Maree, 2009). I first applied for ethical clearance from the Research Office of the University of KwaZulu-Natal. Upon their approval to conduct my study at Bartimia Primary School in Lesotho, I travelled to Lesotho to meet the Senior Education Officer at the Ministry of Education and Training to guide me on the procedures to follow to conduct my study at the selected school in Maseru, Lesotho. I was subsequently granted permission to conduct the research at my chosen study site in a written and signed consent letter. I was also referred to the principal of the Bartimia Primary School who granted me the necessary permission to conduct the study at her school. She introduced me to four Grade R in-service teachers and explained to them why I was at their school and what I was going to do.

However, one Grade R in-service teacher declined to participate in the study, and thus I had to work with only three participants. The principal allowed me to have a talk with each of the three Grade R in-service teachers and we discussed the best times to conduct the interviews and observations. During the conversation with my participants, I stated the title of my study and its purpose. I further clarified that their participation would be voluntary and that they had the right to withdraw from the study at any time. I gave them the assurance that there would be no penalties or any charge if they did not participate. I assured them that the name of their school and their own names would not be used; instead, pseudonyms would be used for anonymity purposes. I obtained their permission to use an audio-recording device for study purposes only, and they signed a consent form for me to do so. I established a suitable time for the interview and observation sessions with each respondent.

Bertram and Christiansen (2014) stipulate that there are two main sampling methods that could both be stratified. They state that the main sampling methods are random and purposive. A sampling method becomes stratified when the sampling has categories and sub-categories, for example male and female teachers who teach in primary and secondary schools in rural and urban areas. In addition to these sampling methods, Rule and John (2011) mention that there is convenience sampling as a third method of sampling. Cohen, Manion and Morrison (2011) add other sampling methods such as snowball, quota, cluster, stage and others that can be selected by

the researcher. Rule and John (2011) warn that the sampling method selected should be determined by the type of approach used in the study.

Therefore, as I intended to use a qualitative approach which requires in-depth descriptions, I argued that purposive sampling would be most appropriate for my study. According to Flick (2006), purposive sampling refers to the choice of participants based on some defining, specific characteristics that qualify them to be potential holders of the required data for a study. For these reasons my participants were chosen purposively based on the characteristics that I had envisaged them to possess. The participants in my study were three Grade R in-service teachers who were assigned to teach literacy to visually impaired Grade R learners at Bartimia Primary School.

The teaching experiences of the respondents at Bartimia Primary School ranged from three years to more than thirty years. Their qualifications ranged from a Diploma in Braille to Bachelor of Education degrees. Only female teachers were employed at Bartimia Primary School at the time of the study, and therefore my participants were all females. Because there was no intention of obtaining data for comparative purposes, I regarded the available respondents as the potential holders of the required data; i.e., they should all use Braille to teach literacy to visually impaired Grade R learners. In terms of this purpose it was irrelevant whether the participants were male or female.

3.2.5 Data Generation Tools

Data generation tools are the instruments used to generate data in empirical research (Creswell, 2009). He further explains that qualitative research allows multiple sources of data tools in order to generate trustworthy data; therefore I used a variety of data collection tools namely interviews, observations and document analysis. In support of the use of various data tools, Thomas (2011) states that multiple sources could be used in qualitative research to yield rich and trustworthy data.

Table 3.1 provides a diagrammatical illustration of how I used the theory in the data collection process during the interview and observation sessions.

Table 3.1: Theory Underpinning Data Collection

Koehler and Mishra' Theory	Interview Questions	Observation Schedule
Content knowledge	<ul style="list-style-type: none"> • Which are the main literacy concepts that have to be taught to visually impaired learners in Grade R? • Give an example under each concept. 	Coherence and logic of lesson; introduction, teaching methods, activities and assessment.
Pedagogical knowledge	<ul style="list-style-type: none"> • Which methods do you use when teaching literacy to visually impaired learners in Grade R? 	Different teaching and learning methods: (manipulation, discussion, explanation, role-play, questions and answers, etc.)
Pedagogical content knowledge	<ul style="list-style-type: none"> • How do you arrange your Grade R learners when teaching literacy? • Do you consider their different learning styles? 	Classroom arrangement and organisation: <ul style="list-style-type: none"> • teaching using groups, pairs or as one class • learning styles, assessment
Technology knowledge	Which tool do you use when teaching reading and writing to Grade R learners who are visually impaired?	Use of Braille tools such as Braille stylus, Braille slate, Mountbattan Pro Brailier, peg slate, pins and Perkins Brailier.
Technological content knowledge	Do you start with alphabetic Braille or contracted Braille,	Integration of literacy concepts with Braille code

	or you use them both when teaching literacy to visually impaired learners in Grade R?	concepts.
Technological pedagogical knowledge	What are some of the things a teacher has to know when teaching learners who are visually impaired?	Use of various concrete and improvised materials such as peg slate, improvised Braille cells, (e.g., six-hole muffin pan

Own illustration

Below are the various tools that were utilised in my study to generate the empirical research data.

(a) Interviews

According to Cohen, Manion and Morrison (2011), an interview is a structured and well-planned conversation between the researcher and the participant. Hennink, Hutter and Bailey (2011) further state that in-depth interviews deal with people’s experiences and they are conducted in places the interviewees are familiar with and where they will feel comfortable and relaxed. I therefore conducted the interview sessions in the respondents’ respective classrooms where they indicated they would be most comfortable. I had a face-to-face planned conversation with each Grade R in-service teacher at the scheduled, appropriate and convenient time. Hennink, Hutter and Bailey (2011) further state that a researcher directs the conversation and asks questions that lead towards the information he or she is seeking from the participant.

Thomas (2011) mentions that there are different types of interviews when conducting research. These are structured, unstructured or semi-structured interviews. Semi-structured interviews are the ones that allow the researcher to ask open-ended questions and they also allow for probing, whereas unstructured interviews are rigid. I therefore used semi-structured interviews in which I could direct the conversation by asking further, probing questions in order to get an in-depth understanding of what knowledge the participants had pertaining to the research questions. I referred to an interview guide during the interview sessions. These questions probed for background information of the teacher and addressed the key research questions. The final interview question probed the challenges that the participants encountered during their literacy

teaching using Braille. I recorded each interview session in order to capture the interviewee's and my own spoken words, phrases and expressions. This facilitated accuracy during the transcription process.

The interview guide that I had assisted me in asking probing questions to get a deeper understanding of in-service teachers' knowledge of using Braille to teach literacy to visually impaired Grade R learners. The interviews proved to be a helpful data generation tool as I was provided with rich information on what my respondents knew (knowledge and information), liked or disliked (values and preferences), and thought (attitudes and beliefs) (Rule & John, 2011). For example, during her interview one in-service teacher stated that literacy concepts were oral language and alphabet knowledge (subject matter knowledge). Another respondent was not able to give the exact answer to the question about literacy concepts while the third participant indicated that literacy concepts were reading, speaking, listening and writing. She therefore stated literacy skills rather than concepts. Three participants showed that they preferred to teach letters of the alphabet orally using grade 1 Braille (unconstructed Braille). They all thought that this was the best way to teach literacy as they indicated that when learners were fluent in speaking, it was easy to integrate and master other subjects.

(b) *Observation*

King and Horrocks (2010) state that observation means that the researcher goes to the site of the study and has a close look at the actual activities that are taking place. Observation allows the researcher to obtain first-hand data and to report things that he or she witnessed while they were happening. In addition, Creswell (2009) indicates that observations provide trustworthy data because the researcher reports or writes about something he or she saw. Cohen, Manion and Morrison (2011) state that there is structured observation which uses a planned schedule and where a researcher has a clear picture in mind of what he or she wants to observe in the study field. Secondly, there is an unstructured interview which is the opposite of the former.

The structured observation approach was appropriate for my study because I could observe events in the physical setting of the classroom and the school surroundings. I engaged in observing Grade R in-service teachers during their real teaching of literacy using Braille. I looked closely at the use of teaching methods and strategies during the literacy lessons in classroom context, with specific reference to Grade R learners who were visually impaired. I was able to observe to what extent the in-service teachers integrated literacy concepts with Braille reading and writing concepts and whether they catered for different learning styles, cognitive development, and the different backgrounds of their learners. I could also determine if there were logical flow and coherence of teaching methods and activities, and whether their teaching aids were used appropriately.

(c) Document analysis

Documents are existing written materials that are relevant to a particular study (Heck, 2011). The documents may be published or unpublished, and they may comprise memos, letters, or agendas and minutes of meetings (Cohen, Manion & Morrison, 2011). In this study I perused the following documents that I found relevant to my study: lesson plans, and Literacy and Braille syllabuses.

Schoenfeldt and Salsbury (2009) stipulate that a lesson plan is an arrangement of practical instructions that explain how the selected content will be taught, when and how to utilise materials, and how to assess what was learned throughout the lesson. Hence I looked closely at teachers' daily lesson plans where I considered the general layout or format that they were using, and the integration of Braille concepts with other subjects, particularly Literacy.

Kostelnik, Soderman and Whiren (2011) postulate that an effective Grade R Literacy curriculum or syllabus should contain the following six domains that are considered as major facets of child development: aesthetic, affective, cognitive, language, physical and social. In light of this I perused the Literacy syllabus in Lesotho which is entitled *Literacy Window: English*. I observed whether this syllabus covered the major aspects of child development as referred to in the literature, namely aesthetic, affective, cognitive, language, physical, spiritual and social.

I also perused the Braille syllabus that the in-service teachers were using, entitled *Standard English Braille* (Royal National Institute for the Blind, 1992).

I chose to engage in document analysis as one of the data generation tools as this would complement the data from the interviews and the observations in an effort to triangulate the data. This triangulation process added validity and credibility to my study. Creswell (2013) encourages the analysis of documents because they give the researcher an understanding of the participants' language.

In terms of the documents that I analysed, I observed that the teachers used the Grade R Literacy syllabus entitled *Literacy Window: English* which does not guide and assist teachers on how to cater and adapt materials for learners with VI. Also, the Braille syllabus that they used was the *Standard English Braille* syllabus which will be phased out by 2016 in all English speaking countries.

3.2.6 Data analysis

Data analysis means “the separation of a whole into parts, for the purpose of the study” (Bertram & Christiansen, 2014, p. 115). Qualitative data could be analysed inductively or deductively. Inductive reasoning works from raw data that have been generated and themes, patterns and categories are detected. Emerging patterns from data will be highlighted and once common patterns are identified, data will be classified according to the patterns (Thomas, 2011). In this study I analysed the generated data using deductive and inductive reasoning. These processes allowed me to detect the categories and classify and identify emerging patterns in regard to my exploration of in-service teachers' knowledge of using Braille to teach literacy to visually impaired Grade R learners. Flick (2006) suggests that inductive reasoning is open-ended and exploratory at the beginning by its nature.

I first transcribed the participants' comments verbatim in order to understand their views in their own words, phrases and expressions. Then I interpreted their meanings with regards to their knowledge of using Braille to teach literacy. Secondly, I removed the identifiers to preserve the participants' anonymity by replacing names with pseudonyms. I developed codes from the interview guide and the literature review. Hennik, Hutter and Bailey (2011) refer to the codes developed from an interview guide and literature review as 'deductive codes'. From my interview schedule and the concepts procured from the research literature, I identified themes

such as teachers' pedagogical content knowledge of teaching literacy, teachers' technological knowledge of teaching literacy, and teachers' situational knowledge of learners and their learning styles. However, I combined deductive with inductive reasoning. In this process I read the data and allowed the data to 'speak for itself'. This allowed me to develop codes that emerged from the issues that had been raised by the participants. Hennik, Hutter and Bailey (2011, p. 218) affirm that "searching for inductive codes allows the data to 'speak for itself', which is the central part of qualitative data analysis." The code that strongly emerged was *teachers' content knowledge of using concrete objects during teaching and learning*.

3.3 Credibility and Trustworthiness

Every qualitative researcher has to ensure credibility and trustworthiness of the generated data, because qualitative research depends on thick descriptions that provide adequate detail and depth. It is also important that the researcher does not generalise the findings (Thomas, 2011). This is because the participants are not representative of the entire population. However, the findings could be transferred to a different context (Cohen, Manion & Morrison, 2011). The findings that emerged from this study could not be generalised. I avoided generalisation through sampling by purposively choosing Grade R in-service teachers who taught literacy to Grade R learners who were visually impaired. I also used multiple data tools to generate data to add trustworthiness and credibility to the data that were generated. Hennink, Hutter and Bailey (2011) indicate that using more than one data tool adds the value of trustworthiness to the study. I played and re-played the audio-recorded tapes of the participants, and then I transcribed their comments verbatim. After this, I took the transcriptions back to the participants for them to check whether what was written was a true reflection of what they had said and done. Cohen, Manion and Morrison (2011) refer to the taking of transcripts back to the participants as "member checks".

In addition, I also ensured that I took the same raw generated data to my supervisor and another person to read so as to check for any omissions and inaccuracies. Henning (2005) refers to this as a process of "confirmability" (p. 135). It is one of the most important actions in social science research as it offers another person an opportunity to engage with one's generated data to see whether the person will come up with similar or different findings (Bertram & Christiansen, 2014).

During the interview sessions I used an audio-recording device with the approval of my participants who had signed a consent form that I could use such a device. I made use of an audio-device to ensure consistency in recording the entire conversation and to ensure that I accurately captured the spoken words of the participants without missing important points. Rule and John (2011) encourage the use of an audio-device as it ensures credibility and consistency because the researcher will record the entire conversation, whereas merely jotting down some points could result in inaccuracies. Using an audio-device recorder allowed me an opportunity to re-play the conversations in my own time for the verbatim transcription of the participants' comments. This allowed the data to be authentic and a true reflection of participants' experiences and actions.

3.4 Ethical Considerations

Creswell (2013) states that the researcher has to protect the participants at all costs by ensuring that the information provided does not cause any harm to anyone under any circumstance. I first applied for ethical clearance from the Research Office (Edgewood Campus) of the University of KwaZulu-Natal where I am pursuing my Master of Education studies. I was granted authorization to conduct a study at Bartimia Primary School in Maseru, Lesotho. I subsequently applied for consent from the Special Education Unit of the Lesotho Ministry of Education and Training, requesting permission to conduct the study at Bartimia Primary School.

Once permission had been granted, I wrote a letter to the principal of Bartimia Primary School to request permission to conduct my study at her school. Finally, the participants were given a full description of the purpose of my study. Once they had agreed to participate, they were asked to sign a voluntary consent form. The purpose of my study was clearly stated in the consent form and my participants were assured that the information they would give would remain anonymous and they would not be able to identify anything related to themselves and their school. I also stated that the participants were free to withdraw from the study at any time should they wish to do so at any point or stage of the study. Cohen, Manion and Morrison (2011) clearly stipulate that the autonomy of the participants must be respected at all costs. In addition, Creswell (2013) indicates that the participants should participate in the study voluntarily and have to be allowed the freedom of withdrawal from the study at any time and stage.

3.5 Problems Experienced and Limitations of the Study

Despite the assurance that I gave to the respondents that my presence in their classroom would be for my study purposes and they should feel free and ignore me when teaching literacy, I still felt like an outsider during my stay at Bartimia Primary School. Having an ‘outsider’ in the classroom seemed to hinder the teachers’ freedom to express themselves clearly and without tension. I noticed that they were nervous and they demonstrated uncertainty during their teaching as they considered me in the same light as one of the Supervisors from the Ministry of Education and Training. The teachers really felt uncomfortable and eventually they did not teach the way they used to teach literacy. One teacher even omitted to introduce and conclude her lesson and she also forgot to use the teaching materials she gave to some of her learners. However, Creswell (2013) states that being an ‘intruder’ in an individual’s classroom allows such a person the opportunity to observe even private information that an individual may not like to be revealed.

Another limitation that I anticipated was that if one participant withdrew from my study, it would have a negative impact as finding a replacement in the limited time available was impossible. As it happened, one Grade R in-service teacher withdrew from my study for undisclosed reasons. Her withdrawal negatively affected my study. I had to proceed with three in-service teachers instead of four. Although the impact was felt, I managed to continue with my research study and the data I generated were not extensively affected by the withdrawal.

3.6 Conclusion

This chapter provided a brief description of the paradigm that framed and the research approach that underpinned my study. The case of one school and the choice of participants were explained briefly. A description of the data tools that were used to generate data was given. These were semi-structured interviews, structured observations, and document analysis. The analysis of the data involved triangulation, which enhanced the validity and credibility of the study. I also outlined the ethical issues that were important in how I engaged with my participants. I also discussed the limitations of the study and their resolutions. The successive chapter will present a discussion of the data and an analysis of the findings.

Chapter Four

Data Presentation, Discussion and Analysis

4.1 Introduction

The previous chapter has highlighted the research design and methodology that were employed in this study. This chapter aims at highlighting the findings that were derived from the data that had been generated by means of interviews, classroom observations and document analysis. Four themes emerged from the data. Four themes were derived from the interviews with my participants. The themes that emerged were the following:

- teachers' pedagogical content knowledge of teaching literacy concepts;
- teachers' technological knowledge of teaching literacy;
- teachers' situational knowledge of learners and their learning styles; and
- teachers' content knowledge of using concrete objects in teaching and learning.

I will discuss the findings obtained from three classroom observations of Grade R in-service teachers in some depth. To validate the findings, I also extend my discourse to the findings that were derived from my perusal of the documents used by the respondents pertaining to the use of Braille to teach literacy to VI Grade R learners. The documents that I analysed were teachers' daily lesson plans and the Literacy (*Literacy Window: English*) and Braille (*Standard English Braille*) syllabuses.

4.1.1 Teachers' Pedagogical Content Knowledge of Teaching Literacy Concepts

The interview sessions revealed that the three respondents had limited content knowledge of teaching Literacy as a subject because they focused mainly on teaching Braille codes with their rules and regulations. I observed that even in their real teaching, the emphasis was mostly on reading and writing Braille codes. The oral language that they taught was basically on how to read and write letters of the alphabet in Braille, and there was no emphasis on teaching phonics and letter sounds while teaching letters of the alphabet. It was clear from the face-to-face interviews that the respondents lacked both Literacy knowledge of the pedagogy to be used when

teaching literacy to Grade R learners with visual impairments. Moreover, they lacked knowledge of the content to be taught to these learners. Koehler and Mishra (2009), Shulman (1986) and Ball, Thames and Phelps (2008) all emphasise the importance of possessing content knowledge (i.e., knowing the subject that has to be taught in a particular grade) and pedagogical knowledge (i.e., teachers have to know how their learners learn, manage the classroom, plan the subject they teach well, and use appropriate assessment tools for individual learners).

When interacting with **Teacher Lefiso**, she showed knowledge of the Literacy syllabus content as she was able to mention the two literacy concepts that are to be taught to Grade R learners and she was able to give examples under each concept. However, her other two colleagues were not confident in explaining the knowledge they had for teaching literacy to their visually impaired Grade R learners.

Teacher Lefiso said:

Oooh.... I think Grade R learners who are visually impaired should be taught alphabet knowledge and oral language. The examples of alphabet knowledge are letters of the alphabet and their meaning, for example A=a, B=bu...Z=as.

Teacher Tlhohonolofatso, though, was not very confident about the teaching of literacy concepts. She said:

Grade R learners who are visually impaired are taught the same literacy concepts that are taught to the learners who are sighted. I hope you know them as you are a primary teacher. Isn't it so?

Teacher Molebong said:

Mhm....literacy concepts that are to be taught to Grade R learners who are visually impaired are speaking, reading, listening and writing skills. Examples of listening and speaking are storytelling, role-play and rhymes.

The above responses revealed that the respondents had limited knowledge of literacy concepts to be taught to Grade R learners. Their literacy (content knowledge) was also revealed to be very limited when I analysed their responses at a later stage. **Teacher Lefiso** could not mention any of

the five literacy concepts involved in literacy teaching as specified by Erickson and Hatton (2007). Those concepts are oral language, print awareness, alphabet knowledge, phonological awareness, and early writing skill. She had some awareness that literacy has important concepts that are to be taught to learners who are visually impaired, though she didn't have a teaching qualification. It may be argued that her lack of teaching training might have restricted her from knowing all the important concepts that are to be taught to Grade R learners who are visually impaired.

Teacher Moleboheng tried to state literacy concepts; instead she specified the skills that are to be developed in Grade R learners. However, during her actual teaching and learning she engaged oral language, writing skills, alphabet knowledge and phonological awareness, which are the literacy concepts. **Teacher Tlhohonolofatso** was uncertain and didn't want to give an exact answer about the important literacy concepts that are to be taught to Grade R learners who are visually impaired, and therefore she also failed to give examples under each concept. Maybe this was because she had trained for her teacher's qualification a long time ago, in the early 1980s.

During their teaching and learning engagements, all three teachers seemed to focus mainly on oral language where learners were asked to say the dots which represent the letters of the alphabet. Moreover, they seemed to teach Braille as a 'standalone' subject without integrating it with other subjects. Most of their activities involved oral questions and answers, and only a few learners were allowed to practise writing Braille codes. The learners who were supposed to write were asked to say the dots of the letters of the alphabet orally and then they were allowed to write. Disconcertingly, the teachers never checked whether what they had punched was a correct dot or not. When I asked a probing question to determine whether the teachers thought that teaching learners with VI differed from teaching learners who are sighted, the respondents alluded that there was a huge difference between teaching learners with visual impairments compared to learners who are sighted.

Teacher Lefiso:

I never taught learners who are sighted but what I know about learners who are visually impaired is they need to be taught with concrete objects so that they will have a clear mental picture of the concept introduced to them.

Teacher Tlhohonolofatso:

Learners who are sighted learn most of the things on their own even before they enrol in formal learning, unlike learners who are visually impaired who need skills to be taught so that they can participate in classroom and home activities. They even need to be taught using real objects which sometimes are unavailable.

Teacher Moleboheng:

Learners with visual impairments need real objects in order for them to understand the concept that is being taught, unlike their peers who are sighted who can observe, imitate and explore independently.

These in-service teachers were aware that learners who are visually impaired need to be taught with concrete objects all the time. However, they seemed to use the same objects during their teaching and learning lessons. They predominantly used counters and egg box containers. The exception was **Teacher Moleboheng** who engaged learners in manipulating different toys. However, there was no variety in the use of concrete or improvised objects in their classrooms that would instil comprehension of literacy concepts so as to allow their learners to learn in their own space and for different purposes. I therefore was lead to conclude that the respondents had limited or no pedagogical knowledge at all. Koehler and Mishra (2006) and Ball, Thames and Phelps (2008) insist that every teacher in the teaching profession should know that their learners learn differently and that they should accommodate learners' different learning styles in the lessons. They should also manage their classroom behaviours as well as make use of various teaching strategies to facilitate smooth teaching and learning processes. It was therefore disconcerting to note that the in-service teachers seemed to use only Braille counters in most of the activities.

4.1.2 Teachers' Technological Knowledge of Teaching Literacy

The findings revealed that the in-service teachers focused mainly on teaching Braille concepts more than teaching literacy concepts. When responding on how their learners who are visually impaired come to know how to read and write, all the in-service teachers stipulated that they usually introduce their learners to Braille codes or dots so that they could feel different shapes of different letters of the alphabet. They also indicated that they used to engage their learners to various textured activities in order to sharpen fingertip sensitivity, as suggested by Schoenfeldt and Salsbury (2009). They further state that learners who are visually impaired depend on their fingers for reading, and therefore they have to be involved in various activities so that they will classify, identify and eventually read Braille dots and get meaning out of touch.

All the participants showed a good knowledge of the technology required to teach Braille codes and they all specified that they started with alphabetic Braille in Grade R and Grade 1; afterwards they would introduce contracted Braille to their learners when they are in Grade 2 and continue until they reach Grade 7. For example:

Teacher Lefiso said:

I teach my Grade R learners letters of the alphabet and their meanings using alphabetic Braille. Thereafter I do introduce them to contracted Braille when they are in grade 2 classes, except for the letters which stand for words such as K for knowledge, P for people, E for every, etc.

Tlhohonolofatso said: *in grade R I teach letters of alphabet orally focusing on braille dots.*

Moleboheng: *In foundation phase we teach alphabetic braille especially in Grade R to Grade 2 then from Grade 3 we introduce our learners to contracted braille.*

In response to the probing question why they started with alphabetic Braille and not contracted Braille, they all indicated that alphabetic Braille has no restrictive rules and regulations to abide by because every letter is expressed, unlike contracted Braille where a letter or group of letters could represent the whole word or letters in a word.

Teacher Tlhohonolofatso:

Contracted Braille is complicated because there are rules to follow; for example, this group of letters CH represent the word Child, CC in a word Accept will be represented by middle C.

Teacher Moleboheng:

Contracted Braille has abbreviations such as Bl for blind, abv for above, and many more.

Teacher Lefiso elaborated on the responses given by her colleagues by saying:

....contracted Braille has short forms, contractions, word-signs, and group-signs which have rules and regulations that learners have to abide by; therefore as Grade R learners are still young we do not introduce them to grade 2 Braille (contracted Braille) except for the letters of the alphabet which represent a word such as B=but, J=just, S=some, etc.

It was heartening when the interviews revealed that these in-service teachers showed a very good knowledge of the technological tools that are supposed to be used in order to teach reading and writing using Braille. Koehler and Mishra (2009) affirm that it is advisable for teachers to be knowledgeable about technology if they want their learners to be technologically competent in this digital age.

However, even though the teachers were knowledgeable about the tools to use to teach reading and writing (literacy) in Braille, they indicated that they only let their learners use peg slates with pins, slates and styluses. These tools are all regarded as old-fashioned ways of writing Braille. Apparently, they never introduced their learners to other advanced Braille tools such as the Perkins Braille machine, the Mountbattan Brailier, and computers with speech devices because of the scarcity and expense of such tools. These technologically advanced tools are only used by teachers. However, Mishra and Koehler (2006) argue that technology can be old or new, digital or analogue as long as it helps to facilitate content learning. Therefore the teachers were using slates, styluses, peg slates and pins to facilitate their teaching of literacy.

In response to the question which Braille version they were using, they all indicated that they were using *Standard English Braille*. This means that they were using an out-dated version which will be completely phased out by the year 2016 in all English speaking countries. This old

version will be replaced with *Unified English Braille* (UEB). UEB uses a simplified form of Braille by abolishing lots of contractions. Moreover, it now uses a unified code for different subjects such as maths, computer literacy, science, and foreign languages. Sadly, the participants were not even aware of the fact that the older version of Braille would be phased out in the near future.

4.1.3 Teachers' Situational Knowledge of Learners and their Learning Styles

The findings revealed that in-service teachers possessed a certain level of knowledge of their learners. For example, they were aware that their learners were from different backgrounds and that they learnt differently and that they thus needed to be acknowledged and treated differently. Knowing and understanding that learners are from diverse cultural backgrounds should enable in-service teachers to cater for all the various learning styles when they plan their lessons, and they should vary their teaching methods to suit all learners (Morrow, 2007). Morrow further states that every teacher must possess knowledge of the learners so that they plan activities and teaching materials based on the learners' various learning styles; assess them according to their different abilities; and be in a position to manage their classrooms during teaching and learning so that all learners are catered for. The in-service teachers were aware that their learners had different learning styles; maybe that was why they divided them in different learning ability groups during the lessons. The first group was for those who were able to speak fluently but who were not able to write yet. The second group was for those who could speak and write letters only, and the last group was for those who were able to write words and sentences. However, their classrooms were too small and did not allow free movement among the groups. Dennis, Lynch and Stockall (2012) specify that a classroom of learners with VI should provide safety, comfort and ensure free movement. However, in spite of this situation, the teachers were able to interact with their learners even though they were seated very close to one another and the classrooms were somehow overcrowded. I observed that the teachers were able to strengthen their knowledge of their learners and somehow cope with the conditions in which they were teaching.

In response to the question on their learners' different learning styles, the answers were as follows:

Teacher Lefiso said:

Learners learn through using their five different senses such as seeing, smelling, touching and tasting.

Teacher Tlhohonolofatso:

Learners with VI learn best through touch and hearing.

Teacher Moleboheng further added:

Learners who are visually impaired learn best through touch and hearing...mmmm that is what we call auditory learning, for they are the most important senses that they could use to get first-hand experience about the concept that is taught by manipulating and exploring it extensively.

The respondents confirmed that visually impaired learners need to engage in activities that will develop their fingertip sensitivity so that they will explore, classify and eventually read Braille dots in order to get meaning out of touch.

Even though the in-service teachers were aware that learners who are visually impaired need a variety of activities such as cutting, painting, collage and drawings, their classrooms didn't show any evidence of activities done previously. Textural displays could be used to sharpen their learners' fingertip sensitivity. The activity that was done most often was manipulating the Braille counters to search for a certain letter of the alphabet. It was evident that during their teaching and learning periods there was no variation in the activities to develop fine motor skills. One reason for this may have been the small classrooms that did not allow free movement of learners.

In response to a question on which activities were done in order to develop learners' fingertip dexterity, the responses were as follows:

Teacher Lefiso said:

I allow my Grade R learners to manipulate objects of different textures such as dough, clay, sand, various fruits so that they feel the roughness, smoothness and softness of the objects.

Teacher Tlhoholofatso said:

I normally bring objects of different textures - rough or smooth, hard or soft and plain - to the classroom to enable my learners to sort, identify and eventually name the objects.

Teacher Moleboheng said:

I used to bring collaged materials of different textures to allow my students to feel, touch, smell and sometimes taste in order to develop fingertip sensitivity and listening skills.

What the participants had said in the interviews they normally did (such as bring various teaching materials to class for learners to explore and manipulate to develop fingertip sensitivity) was contradicted by their actual teaching. I observed that all the three teachers used similar Braille counters and there were no other improvised teaching aids that portrayed literacy concepts and Braille concepts that could be noticed in their classrooms. However, they did show good knowledge of their learners and their different learning styles. They were cognisant that learners acquire learning differently although, during their real teaching, they did not accommodate all the learners as they focused mainly on the groups that said the dots of the letters of the alphabet orally. They ignored other learners who were asked to write letters of the alphabet and words or sentences. However, they engaged all the groups in manipulating and exploring the Braille counters when learners were searching for a specific letter of the alphabet; thus they facilitated the development of the motor skills of their learners. The findings therefore showed that in-service teachers seemed not to be creative enough to improvise by making variety of manmade teaching aids with texture, musical sounds and smells so that their learners could feel, listen and at times smell an object while exploring it in order to develop fine motor skills and sharpen fingertip sensitivity.

4.1.4 Teachers' Content Knowledge of Using Concrete Objects in Teaching and Learning

In-service teachers showed an average knowledge of using concrete objects during teaching and learning. They agreed that learners who are visually impaired need real objects when a certain concept is introduced to them so that they can feel an object as a whole. They further postulated that learners who are visually impaired need to be taught concepts as a whole and not in parts, so that they will have a clear mental picture of the concept that is introduced to them.

Teacher Lefiso:

Learners who are visually impaired need to be taught with concrete objects always; these are not always available during teaching and learning periods.

Teacher Tlhohonolofatso said:

Learners with VI need concrete objects in order to understand the concept that is taught.

Teacher Moleboheng:

Real teaching objects are expensive and unavailable; hence we teach our learners in abstract ways which make our teaching very difficult.

The above responses showed that the respondents were aware that learners with VI need to be taught using concrete objects so that they will have a clear mental picture of the introduced concept. However, to my surprise, no materials that revealed literacy concepts were used during the lessons, except the Braille counters which they exchanged between classes. Koehler and Mishra (2009) and Shuman (1987) specify that teachers should know how to vary their instructional materials and methods so that the content that they facilitate will be understood and allow learners to gain and socially construct knowledge. In my view, the respondents had very limited pedagogical knowledge because they failed to create variations of their own teaching and learning resources which would contextualise literacy concepts and give their learners an understanding that materials could be used for various purposes.

I also asked the respondents how they arranged their learners while teaching literacy. Their responses were as follows;

Teacher Lefiso said:

It depends on what I teach. Sometimes I arrange them according to their age, socialisation, cultural backgrounds and ability.

Teacher Tlhohonolofatso, on the other hand, said:

I arrange them according to their academic levels of learning. Some are beginners at school, others are able to read and write while the last group is for the learners who were attending school while they were diagnosed with blindness.

Teacher Moleboheng concurred with what her colleagues had said with regards to classroom arrangement and their learners' background and abilities:

Yes, I sometimes arrange my learners according to their learning styles. Those who are able to read and write, those who could scribble and talk fluently are grouped together and those who could only talk fluently but are unable to read and write are put together.

I further probed whether they had IEPs for their learners and how often they reviewed it for each individual learner. My expectation had been that such plans would state the mode of communication, the learner's strengths, weaknesses and most preferable learning style. Two teachers had no idea what my question referred to, and they stated that they did not have an IEP for individual learners.

Teacher Lefiso:

What is IEP? I don't think we have it.

Teacher Tlhohonolofatso:

We don't have an IEP here at Bartimia, what's that?

Teacher Moleboheng:

Here at Bartimia we do not have IEPs, but it was supposed to be there as we are teaching learners with disabilities. I learned [about this] when I was doing my Advanced Diploma in Special Education.

Teacher Moleboheng was an exception as she specified that she knew about and had been trained in the use of IEPs while pursuing her Advanced Diploma in Special Education. The implication was that the use of IEPs was not a requirement at the school. Based on this finding, it is my view that they missed a core element of the requirements for teaching and learning for learners living with disabilities. Wamba and Dunn (2009) explain that an IEP is an essential requirement for all learners with disabilities because it will state the current performance of the learner, and his/her weaknesses, strengths, mode of communication, learning style and achievements. They further state that an IEP has to be reviewed regularly in order to see what has been achieved or not achieved, and what needs modification and adaptations so as to accommodate all the learners in the classroom situation.

4.2 Classroom Observations

Research Question: *How does in-service teachers' knowledge of teaching literacy influence their teaching of literacy to Grade R visually impaired learners?*

4.2.1 Lesson Observation 1: Teacher Lefiso

Time: 09h00

Subject: English

Class: Grade R

Learner Enrolment: 13 learners (6 boys & 7 girls)

Lesson Observed: Letters of the alphabet

Description of the classroom environment

It was a square shaped classroom of 4 metres by 4 metres. The classroom walls were neat and painted yellow with two small windows at the back and one large rectangular window in front. All windows and door had burglar proofing for security purposes. **Teacher Lefiso's** classroom was the second room to the right of the learners' dormitory. The teacher's seating faced the doorway. There were two electrical heaters mounted on the two opposite walls; one for the teacher and one for the learners. The heaters provided warmth during the cold winter season. Despite the cold weather, it was a very warm inside the classroom, which was conducive for teaching and learning. There were also book shelves, a mathematics kit, a flower pot on the book shelf, book locker, and learners' chairs and desks. These were the only obvious items in the classroom. There were no pictures or posters with literacy concepts on the walls and no evidence of learners' work. There was a time-table pasted on the wall which was written in print only. There were about four combined tables where learners were seated in pairs facing each other.

The learners were seated in three groups according to their level of ability: the beginners in the school environment, the learners who could talk fluently but were unable to read and write Braille, and the learners aged about 9-11 who had attended mainstream schools before they were diagnosed with visual impairment (i.e., they were blind or had low vision). The latter group had

been taught how to read and write, which means that they did have literacy content knowledge even though they did not know how to use Braille. Upon my arrival in **Teacher Lefiso's** classroom I was welcomed and provided with a chair and table similar to hers. I was seated, facing towards the doorway like the teacher.

The lesson was introduced with a chorus song. Learners were asked to say letters of the alphabet and their meaning in Braille. For example *a=a, b=but, c=can, d=do, e=every, f=from, g=go...z=as*. Thereafter, the teacher distributed the Braille counters to each learner in the third groups. The beginner group was instructed to make “for sign” with the given counters, the second group was asked to make these letters of alphabet: A, B, K, L and P. The third group of learners were using their slates and styluses to write. While making letters of the alphabet, the learners were asked to say out the dots which make each letter, for example letter *A* is made up of *dot 1, B, dot 1 & 2, K dot 1 & 3*. The teacher asked individual learners of the beginners' group to say out “for sign” dots and to make them using the given counters. The counters were Brailled to enable learners to feel the dots and then to decide which letter was on the counter. The teacher was moving around the groups to observe learners' work while asking each learner to say out the dots of the letter he or she was making.

Teacher Lefiso (asking learners to sing the letters of alphabet song with her): *Let's sing A=a, B=but, C=can...Z-as.*

Learners: *A=a, B=but, C=can, D=do, E=every, F=from, G=go...Z=as.*

Teacher Lefiso: *Which dots make letter A? Yes, Mpho, say the dots.*

Mpho: *A dot 1*

Teacher Lefiso: *Good! A is made up of dot 1, Braille letters of the alphabet are made up of the dots. Mention the dots which make “for” sign. Yes, Mponeng?*

Mponeng: *Dot 1,2,3,4,5,6 “for” sign.*

Teacher Lefiso: *Yes, you're right, which dots make these letters B, K & P? Yes, Sello, say B dots.*

Sello: *B dot 1, 2.*

Teacher Lefiso: *Good, let's mention the dots for K and P, all of us.*

Learners: *K dot 1, 3 and P dot 1,2,3,4.*

Teacher Lefiso: *Good, let's clap hands for us. (Learners clap hands while still singing.) Well done! keep it up and shine! Thank you very much! and shineeeeeee!).*

Teacher Lefiso: *lona ba tsebang ho ngola ngolleng ...Those who know how to write, write these letters of the alphabet: A, B, K, L & P. Beginners' group, show me letter A. Yes, Sello?*

Sello *(pickes up the counter): A!*

When recapping the lesson, the teacher asked the learners to say out the letters of the alphabet and the dots that make a mentioned letter. She told learners the letters of the alphabet that are mainly made up of dots. For example: *Which are the dots for K and P?*

Learners: *K dot 1, 3 and P dot 1, 2, 3, 4.*

Teacher Lefiso: *Collect the Braille counters in your groups and put them in the plastic bag.*

One learner from each group collected the Braille counters and put them in one plastic bag. The plastic bag was placed in a locker, and the children were allowed to leave the classroom.

Elaboration on classroom observation

The observation revealed that **Teacher Lefiso's** knowledge of teaching literacy positively impacted her teaching of literacy because she considered learners' prior knowledge of the meaning of Braille letters. She allowed the learners to overlay literacy concepts, specifically alphabet knowledge and oral language (content knowledge), with Braille codes (technology knowledge). In this regard, Koehler and Mishra (2009) and Shulman (1986) propose that teachers should possess a good content knowledge in a particular grade and know how to teach a specific subject using a variety of teaching materials, methods and strategies. Koehler and Mishra (2009) further indicate that technology knowledge could employ old or new technology and it could be anything that assists teachers in their teaching to deliver the content knowledge. This study proposed that teachers should possess Braille literacy knowledge as their technology

knowledge. **Teacher Lefiso** seemed to be well-organised and knew what she was teaching, because she was teaching specific letters of the alphabet although she didn't put any emphasis on letter sounds and phonics. She also enabled the learners to overlay their knowledge of the alphabet with Braille codes as specified by Emerson, Holbrook and D' Andrea (2009) that learners who are visually impaired do not only learn grammatical rules and the letters of the alphabet, but they also have to overlap their alphabet knowledge with Braille code rules and regulations so that they can learn to read and write. The letters of the alphabet that she was teaching had a particular pattern in Braille code: they occupied the first column of the Braille cell, except letter P, which also occupied the second column at the top. (Refer to the letters of the alphabet, Figure 2.2 in Chapter 2, to review the pattern.) Teacher Lefiso seemed to have logic in her teaching and every time she asked the learners to say the dots of letters of the alphabet, it showed that she had technology knowledge. This could be because she had been trained in reading and writing Braille. However, although she had good technology knowledge, her emphasis was on recalling Braille dots and not on letters' sounds as an important element of literacy teaching.

Teacher Lefiso's classroom activities catered for two learning styles, namely auditory and kinaesthetic, because she used concrete objects (Braille counters) where she allowed the learners to explore the Braille counters in order to identify the required letters of the alphabet. Then she asked learners to select a certain letter of the alphabet and thereafter say the dots which construct that letter. She therefore utilised concrete objects (exploring letters of alphabet) and moved to more abstract concepts (naming the letter of the alphabet). In this regard, Vygotsky (1978) argues that it is advisable to start from the known and to move to the unknown by using concrete to abstract objects. Erickson, Hatton, Roy, Fox and Renne (2007) emphasise the importance of using textured objects as they develop learners' fine motor skills and fingertip sensitivity, which will eventually improve learners' ability to read Braille dots and get meaning out of touch.

Teacher Lefiso further engaged in manipulation, observation, question and answer methods of teaching and learning. She was going around the groups observing whether individual learners had selected the correct letter of the alphabet and she reinforced the concept by asking the same learner to mention the dots of the letter he/she had chosen. She revealed an average knowledge of pedagogical knowledge where she varied her activities and teaching methods as her main

objective was to teach letters of the alphabet in Braille code. Koehler and Mishra specify that teachers should have a deep knowledge about the processes and methods of teaching and learning. They should have a variety of techniques to accommodate different learners' individual needs and differences in the classroom.

She engaged both formative and summative assessment where she asked learners some questions during the process of teaching and also when she was concluding her lesson she further asked questions to find out if the concepts had been mastered. However, during her summative assessment she focused only on the learners who raised their hands. She did not assess all the learners in the classroom; more specifically, the group of learners who were asked to write specific letters of the alphabet, and those learners who didn't raise their hands were ignored. Instead, **Teacher Lefiso** asked the group of learners whom she had instructed to write and say out the dots of those letters. Moreover, she did not check whether what they had punched were the correct dots for those letters or not.

Although **Teacher Lefiso** seemed to be logical and organised, the classroom seating arrangement did not allow free movement among the learners. For example, if one learner wanted to leave the classroom, other learners were forced to stop whatever they were doing and stand up to allow that learner to pass. This caused a lot of disturbance during the lesson. The physical appearance of the classroom further showed a lack of textural stimulus. Machad and Botnarescue (2011) propose that the classroom environment should comprise the factors that will shape the children's development such as social, psychological and physical factors. In this regard, Teacher Lefiso could have left the boxes or bags outside for the learners to learn literacy concepts in their own appropriate time.

The classroom had no learning centres to allow learners additional contact with literacy concepts during preschool routines such as an area for fantasy play, reading, writing, and circle time. Learners seemed to interact with literacy concepts such as writing and letters of alphabet only when they were ordered to do so by the teacher during teaching and learning. The entire classroom lacked responsiveness to learners' cultural backgrounds. It was apparent that the learners interacted with literacy concepts such as letters of the alphabet and writing skills during classroom lessons, whereas no facilities existed for fantasy play, exploration, or manipulation of objects. Clearly, the children were not given opportunities to scribble, doodle or practise cutting

and copying in their own time because there were no such learning centres and literacy materials to use. There were no pictures, or real and improvised toys to play with so that they could be familiar with the names of various objects, which implied that time for fantasy play was limited, or even non-existent.

The objects found in the classroom such as the locker, book shelf and electrical heater were not labelled with any distinguishable tags to enable the learners to locate themselves with ease. Cushman (2013) indicates that objects in a classroom should have textual and textural labels to ease movement and location for VI learners. Even the learners' tables and chairs did not have any tags to assist them to locate themselves easily. It appeared that teacher Lefiso was not creative enough to make her own teaching materials or to make her classroom responsive to learners' culture by displaying literacy concepts.

4.2.2 Lesson Observation 2: Teacher Tlhohonolofatso

Time: 09h30

Subject: Sesotho

Class: Grade R

Learner Enrolment: 9 learners (3 boys & 6 girls)

Lesson observed: dictation of sentences

Description of the Classroom Environment

The classroom had a large window in front and two small windows in the back wall. It was painted in light yellow. There was enough light that penetrated through the windows. The classroom had electric lighting as well. All the windows and the door had burglar proofing for security purposes. On two opposite walls there were two electrical heaters; one for the teacher and the other for the learners. Against the back wall opposite to door there were Mathematics tool kits, a book shelf and a book locker. There were no visible teaching aids or posters pasted on the walls. Objects like the book shelf and the lockers were not labelled with distinctive tags for

ease of location. There was a teacher's table facing in the learners' direction. There were five desks for learners. They were seated in such a way that they faced one another. One desk was shared by five learners. **Teacher Tlhohonolofatso** was teaching the VI learners to use Braille to read in Sesotho. There were three groups of learners, arranged according to their abilities.

The first group was for Braille beginners. These learners were totally new in the school environment. Some of them were born blind while others contracted blindness at the ages of two or three. The second group was for learners who arrived in 2014 at the school for the blind but their fine motor skills were not well developed so that they could explore, manipulate and eventually read and write Braille. The last group was for learners who encountered blindness while they were in mainstream schools and thus they had to be enrolled in the school for the blind to be taught how to read, write in Braille, orientation & mobility skills, and daily living skills.

I perused the teacher's lesson plan for the day. The objectives were according to the learners' abilities. The first objective was for Braille beginners. The teacher wrote: *At the end of the lesson learners will be expected to choose these letters of the alphabet: A and B from the given six letters of the alphabet.* The second objective was for the learners whose fine motor skills were not yet developed: *Say out the dots of these letters of alphabet A-J.* The third objective was for the third group: *Write five sentences dictated and read them aloud.*

It was a thirty minute lesson which was done in the morning. I was welcomed by the teacher and she offered me a table and chair similar to hers. After I had settled down, I waited for the lesson to commence, only to find that the teacher was moving from one classroom to the next looking for teaching aids. Eventually, after fifteen to twenty minutes, she got what she had been looking for and began the lesson. **Teacher Tlhohonolofatso** distributed various teaching materials to different groups of learners. Learners in the beginners group were given peg slates and pins to practise punching these letters of the alphabet (A and B) and they were also given six different letters of the alphabet which were Brailled. The second group was given half dozen egg boxes and counters to practise making letters of the alphabet (A to J), and the third group was given slates and styluses to write five sentences which were dictated by the teacher.

The teacher started with the second group, asking them to say out the dots of letters A and B; then she asked them to punch those letters on their slates.

Teacher Tlhohonolofatso: *Yes, **Selloane**, which are the dots for letter A?*

Selloane: *A dot 1.*

Teacher Tlhohonolofatso: *Yes, A dot 1, you are right. Let's clap hands for **Selloane**.*

Learners *(clapping hands).*

Teacher Tlhohonolofatso: *Punch dot 1 on your slates. Say the dots of letter B. Yes, **Bonang**?*

Bonang: *B dot 1, 2.*

Teacher Tlhohonolofatso: *Ok, you second group, punch dot 1 for letter A, make two lines and another two lines for letter B. (Then she moved to third group where she dictated sentences to the learners to write.) Ok, **Limpho**'s group, I am coming to dictate sentences to you to write, then you will read for me. **Bana ba bapala** (children are playing). B 1, 2, A dot 1, N 1,3,4,5... P 1,2,3,4... Just to remind you, leave a space between your words. **Ke mang a tla re hopotsa na sekheo re se etsa joang?** (Who would remind us how to leave space? Yes, **Limpho**?)*

Limpho: ***Sekheo ha re hlabe letho** (Space is an empty cell where there are no dots raised or punched).*

Teacher Tlhohonolofatso: ***Linonyana li ja mabele** (Birds are eating sorghum).*

K'hethewe: *Teacher! **Litotse tsa J ke mang tichere?** (I do not know dots for J! Which are the dots for J?).*

Teacher Tlhoholofatso: *(reminds **K'hethewe** of the dots which make letter J): Who knows dots for J? Yes, **Bongani**?*

Bongani: *J 2,4,5.*

The teacher then moved to the beginners group and left the third group to finish writing the sentences that had been dictated. The beginners group was asked to choose letter A from the six different Braille letters of the alphabet given. One by one the learners showed the teacher the

letters they had chosen. They were also asked to make the chosen letter (A) by putting a pin in the peg slate.

Teacher Tlhohonolofatso: *Aah... no, Mohale, this is not letter A. Which are the dots for letter A, Mohale?*

Mohale: *A dot 1.*

Teacher Tlhohonolofatso: *Then show me letter A Mohale, on your peg slate.*

Mohale: *(uncertainly, Mohale picks up a different letter).*

Teacher Tlhohonolofatso: *u ngotseng Ts'eli ...Mats'eliso, what have you written? Read, please?*

Mats'eliso: *.... e ea nqaka madam ...I don't know what I have written.*

Teacher Tlhohonolofatso: *Empa u nepile, bala...But you are right. Read, please.*

Elaboration on classroom observation

The classroom observation revealed that **Teacher Tlhohonolofatso's** knowledge of teaching literacy had limited influence in teaching literacy using Braille, as she did not consider learners' prior knowledge of the dots of letters of the alphabet. For example, one learner had to ask her about the dots for letter J. **Teacher Tlhohonolofatso's** teaching was mostly teacher-centred and therefore there was no learner-to-learner interaction. Although she used a teacher-centred approach more often than a learner-centred approach, she managed to use the sense of touch often through the use of counters, peg slates, pins, slate and stylus. Half-dozen egg containers were supposed to be used by the second group to practise letters of alphabet before writing those selected letters of the alphabet; unfortunately, there was only one container for four group members and it was not used at all. There was no cohesion between the objectives, the teaching and learning materials as the learners were introduced to different topics that did not relate to one another or that did not strive to achieve one goal. Moreover, she didn't put any emphasis on the

concepts she was teaching in the individual groups. There was no emphasis put on what she was teaching and she left the activities in all the groups hanging.

The teacher even forgot about the beginners group. For this reason, it was noisy in the classroom in the beginning as the learners were trying to call the teacher's attention very often, asking the teacher what to do. Some told her that they had made letters of alphabet they loudly called the teacher for an inspection of whether the letters were correct or not. **Teacher Tlhoholofatso** seemed uncertain, confused and unprepared for what she was teaching. Due to her impromptu approach, she even forgot to use the additional teaching and learning materials that she had given her learners, such as the half-dozen egg container. She dictated only two sentences to the third group whereas, in the beginning, she had told them that she was going to dictate five sentences.

However, despite these shortcomings I realised that **Teacher Tlhoholofatso** used grouping as her teaching and learning strategy. She further engaged some of her learners in questions and answers though there was no emphasis put on the activities done by different groups. Although the teacher's impromptu approach caused a lot of noise in the classroom, she used formative assessment to a certain extent during her sentence dictation to the last group and even with the two other groups. In one group she asked the learners to say out the dots of some of the letters before they could start writing. There was no recapping of the lesson as indicated in the classroom observation.

4.2.3 Lesson Observation 3: Teacher Moleboheng

Time: 10h30

Subject: Sesotho

Class: Grade R

Learner Enrolment: 10 learners (4 boys & 6 girls)

Lesson Observed: *Mabitso a litho tsa 'mele* (naming body parts)

Description of the Classroom Environment

Teacher Moleboheng's classroom was the fourth from the right. The classroom had a large window in front and two small windows at the back. It was painted in light yellow. There was enough light that penetrated through the windows. The classroom had electric lighting as well. All the windows and door had burglar proofing for security purposes. On two opposite walls there were two electric heaters, one for the teacher and the other for learners. The teacher's table was facing towards the opposite doorway while learners were seated facing towards the doorway. Against the back wall there was a Mathematics tool kit near the right corner, and behind the Mathematics kit there were a book shelf and classroom locker.

Teacher Moleboheng was teaching learners with visual impairments and they were all using Braille as their way of written and reading communication. The topic of her lesson was naming body parts. The Grade R visually impaired learners were expected to name and show their body parts. The objectives in her lesson plan were as follows: *Name at least five body parts and show them, spell those body parts and write any two of them by using slate and stylus.*

Teacher Moleboheng: *Ok, good people, let's say the letters of the alphabet and their meanings.*

Learners: *A=a, B=but, C=can, D=do, E=every, F=from, G=go...Z=as.*

Teacher Moleboheng: *Let's remind ourselves, which are the dots of these letters A, B, C? Yes, Vekelephe?*

Vekelephe: *A dot 1, B dot 1, 2, C dot 1, 4.*

Teacher Moleboheng: *Woooooow...clap hands for Vekelephe.*

Learners *(clapping hands)*

Teacher Moleboheng *(sings):...Hela ngoaneso 'm'e oa kula o jeoa ke litho! litho tsa 'mele; hlooho, mahetla, sefuba, letheka, mangole, maoto litho tsa 'mele! ha re emeng re bine re bonts'e litho tsa rona tsa 'mele.(Teacher sings and asks the learners to stand up, sing and touch or show the body parts that appear in the song.) Hela ngoaneso 'm'e oa kula o jeoa ke litho, litho tsa 'mele (body parts), hlooho (head), mahetla (shoulders), sefuba (chest), letheka (waist),*

mangole (knees), maoto (feet). (Learners sing while touching their body parts that appear in the song.)

Learners: *Hela ngoaneso 'm'e oa kula o jeoa ke litho, litho tsa 'mele, hlooho, mahetla, sefuba, letheka, mangole, maoto (Hela, my sister, my mama is sick, suffering from the body parts: head, shoulder, chest, waist, knees and feet).*

Teacher Moleboheng: *Na le na le litho tsa 'mele (do you have body parts)?*

Learners: *ee!... ee! Madam, re na le litho tsa 'mele (Yes!...yes Madam, we have body parts).*

Teacher Moleboheng: *Ake le mponents'eng tsona hee, Keneuoe mponents'e mahlo. Show me your body parts, Keneuoe, show me your eyes.*

Keneuoe: *a its'oara mahlo (touches her eyes).*

Teacher Moleboheng: *ke li fe litho tse ling hape tsa 'mele? (Which are other body parts?) Yes Tumelo bolela tse peli? (Tumelo, mention two body parts and show us?)*

Tumelo: *kena le molomo le nko (He touched his mouth and nose.)*

(The teacher gives each learner two different toys and asks them to touch, explore and mention the body parts that the toys have. The learners are very excited during manipulation and exploration and they call at the teacher to mention the body parts that they have discovered on a toy.)

Malefetsane: *Madam! Madam! Popi eaka ena le nko, litsebe le matsoho (My toy has nose, ears, and hands).*

Billy: *Madam! Ea ka ena le lirope...(mine has thighs).*

Teacher Moleboheng: *Ok! Ok! Ha re peleteng mantsoe ana; mahlo, nko, litsebe, molomo le meno (let's spell out these words): mahlo (eyes), nko (nose), litsebe (ears), molomo (mouth) and meno (teeth.) Yes, Relebohile, peleta nko. (Relebohile, spell out nose).*

Relebohile: *n-k-o=nko (nose).*

Neo: *m-a-h-l-o=mahlo (eyes).*

Batho: *l-i-t- mmmlitsebe (ears).*

Teacher Moleboheng: *Na Batho o nepile? (Is Batho correct?)*

Tholoana: *O fositse (No, teacher he is wrong.). L-i-t-s-e-b-e=litsebe.*

Teacher Moleboheng: *La bona re na le litho tsa ‘mele, ‘me le lipopi tsa rona li na le litho tsa ‘mele. Joale ke batla e mong le e mong sehlopheng sa Mokone a ngolle litho tse peli tseo re buileng ka tsona, sehlopha sa ba qalang ba khethe letere tsena J le K lona ba bang le ngolle liletere tsena J, K, le L. Empa pele ha re hopotsaneng na lithaku tsena li ngoloa joang J, K, L, H, M. (We have learnt about our body parts and even our toys do have body parts as well. So, I want Mokone’s group to write any two body parts that we talked about, beginners group to choose letter J and K from the eight given letters and the last group to write these letters J, K, L. But before doing your activities, let’s remind ourselves on how to write these letters of the alphabet: J, K, L, H, M. Yes, Mokone, say the dots of J, Neo will say the dots of K, Batho will say the dots of L, Mpho will say the dots of H, and Relebohile will say the dots of M.*

Mokone: *J dot 2, 4,5.*

Neo: *K dot 1, 3.*

Batho: *L dot 1, 2, 3.*

Mpho: *H dot 1, 2, 5.*

Relebohile: *M dot 1, 3, 4.*

Elaboration on classroom observation

The classroom observation revealed that **Teacher Moleboheng’s** knowledge of teaching literacy had a good influence on teaching literacy using Braille, but she was more focused on reading and writing Braille dots than on literacy concepts. She made placed emphasis on the dots which make the letters. She considered learners’ prior knowledge of Braille letters of the alphabet by allowing the learners to sing letters of the alphabet (*A=a, B=but...Z=as*). She further linked her lesson objectives to learners’ real-life lived experiences by allowing them to sing a song about

body parts. At the same time they were encouraged to touch and show those body parts. The cohesion and contextualisation of starting from the known to the unknown made her lesson lively and interesting because her learners commenced with the body parts that they were familiar with. She managed to arouse learners' interest and curiosity by singing a body parts song and they were keen to find out what the next activity would be. She integrated Braille concepts with oral language, alphabet knowledge, phonological knowledge and writing skills (literacy concepts) in various groups. Moreover, the learners were allowed to begin from concrete and move to abstract concepts as she provided her learners with different toys to explore and manipulate. Vygotsky (1978) supports these processes respectively. She used concrete objects which were the learners' body parts and then she moved to abstract concepts where learners were naming, spelling out and writing the names of the body parts using Braille. Thus, according to Koehler and Mishra's (2009) theory, **Teacher Moleboheng** possessed a good awareness of content knowledge, technology knowledge and pedagogical knowledge. She was able to bring the subject content into learners' lived experiences, linking it with Braille.

She emphasised alphabet knowledge when she kept on asking the learners to say the dots of certain letters of the alphabet and they were also allowed to spell out the names of body parts which developed phonological awareness. Even though **Teacher Moleboheng** specified the skills instead of literacy concepts during the interview session, during her actual teaching she managed to put emphasis on oral language, alphabet knowledge, phonological awareness and writing skills, which are the literacy concepts that have to be developed in Grade R classes of learners who are visually impaired. Therefore, her knowledge of teaching literacy had a good influence in teaching literacy using Braille, as she managed to intersect her knowledge of literacy concepts with Braille concepts.

Teacher Moleboheng seemed to be logical and her learners were energetically involved in the manipulation and exploration of toys in discovery of the body parts. They were happy and curious and were keen to give answers after extensively exploring the toys they had with them. **Teacher Moleboheng** engaged her learners mostly in kinaesthetic and oral speaking skills. She did ask learners to mention the body parts found on the toys they had, and thus developed auditory and kinaesthetic skills. She also gave them ample time to explore their toys in search of the body parts. She involved them in questions and answering, explanation, manipulation and

discovery, all of which made her lesson interesting. Her learners were actively engaged in the learning process while they explored and manipulated various toys in their quest to discover the body parts.

Teacher Moleboheng used grouping, Socratic (question & answer), discovery, exploration and explanation as her teaching and learning strategies. She grouped her learners according to different ability levels: those who could write words and sentences, those who could write letters, and those who could only speak. She asked her learners in different groups to perform different tasks which were her evaluations and summative assessments. The beginners group were asked to choose two letters of the alphabet from the eight given letters of the alphabet and in this manner their fine motor skills were developed. The second group was asked to write the letters J, K and L, while **Mokone's** group was asked to write any two body parts discussed during the lesson.

However, before she allowed the learners to perform the activities, she reinforced the Braille dots for the letters J, K, L, H and M. The activities showed that the teacher had cleverly chosen certain letters of the alphabet that had similar Braille patterns: letter H and J are opposite each other, hence letter H dots 1, 2, 5 while letter J dots 2, 4, 5, but they both occupy the whole cell. Letter M also occupies the whole cell, thus letter M dots 1, 3, 4. Letters K and L take the first column of the cell, thus letter K dots 1, 3 and letter L dots 1, 2, 3. By employing different activities, **Teacher Moleboheng** developed oral language, writing skills and alphabet knowledge and strengthened the concepts through manipulation of toys.

She seemed to plan one activity, which was exploration of body parts, but she also managed to integrate speaking, auditory and kinaesthetic skills. She asked her learners to mention the body parts that they found on their toys which developed their oral language. Moreover, she allowed the learners to explore as extensively as possible to find different body parts and in this manner she also developed fine motor skills and fingertip sensitivity.

During the processes of teaching and learning, she engaged in formative and summative assessment. She asked questions during and after the lesson. Even though the learners seemed to be actively involved, she didn't assess all the learners during instruction as she pointed at only some learners to answer. The learners were thus not given the opportunity to volunteer

themselves to show their capabilities in understanding the taught concept. Also, those learners who were asked to write were not even checked whether they had punched the right dots and made the correct letters and words. Instead, the teacher focused on oral language when she asked learners to say out the dots of selected letters (J, K, L, H and M).

4.2.4 Overall Summary of the Classroom Observations

None of the three classrooms displayed any pictures with textural literacy concepts to allow learners to interact with reading and writing at their own time and space. In this regard, Cushman (2013) suggests that the classroom environment of VI Grade R learners should have various textured and pictures or sound objects within reach of the learners to feel and explore in their own spare time in order to familiarise themselves with objects surrounding their environment. The classrooms were rigid and unattractive and, as a result, denied learners the opportunity to learn in their own time. There were no literacy support materials such as writing and free play objects available in any of the three classes. Machad and Botnarescue (2011) feel strongly that writing and other materials should be available in learning centres (or areas) to allow learners to practise writing and other activities in their own time and for different purposes. Conversely, the learners seemed to interact with literacy concepts such as alphabet knowledge and writing skills only when they were instructed to do such an activity or a task during teaching and learning in the presence of the teacher. I observed that the classrooms were not very large, and maybe teachers did not have various learning centres due to a lack of space.

The classroom seating was arranged in such a manner that there was not sufficient space to allow learning to take place in a free-flow manner in various learning centres to enable these Grade R learners to come in contact with literacy concepts during teaching or fantasy play. Kostelnik, Soderman and Whiren (2011) indicate that a classroom should make provision for safety, attractiveness, comfort, language development and symbol knowledge.

Koehler and Mishra (2009) and Shulman (1987) insist that teachers possess an understanding of the content knowledge of the subject they teach and also that they teach what is appropriate and relevant for the developmental stage of the learners in the particular grade they teach. These requirements are essential because teachers need to organise lesson activities in a logical manners and ensure a link between and progression from one activity to the next to make sure

that learners are learning literacy concepts so as to gain new knowledge. The in-service teachers who participated in this study found the application of these requirements challenging, and I have to say that literacy teaching did not occur effectively, especially in **Teacher Tlhohonolofatso's** classroom. **Teacher Tlhohonolofatso** was teaching different topics in various groups and she failed to emphasise the main objective of what she tried to teach in each group.

Effective teaching requires that teachers understand learners' contexts and their prior knowledge, that they teach using tangible objects, and that their lessons progress from the known to the unknown. Vygotsky (1978) argues that it is advisable to guide learners by using real objects before moving to abstract objects or concepts. In the case of learners who have VI problems, the objects should have texture and sounds for the learners to use their remaining senses to detect and differentiate the objects by texture and sound. **Teacher Tlhohonolofatso** failed to consider learners' prior knowledge of letters of the alphabet during her teaching. She also failed to use other teaching aides even though she had given some to the learners, and this showed that she might not have planned ahead.

Koehler and Mishra (2009) further insist that teachers should retain a deep knowledge of the teaching and learning processes and methods (i.e., pedagogical knowledge). Teachers have to understand how their learners learn by considering their different learning styles. Again, teachers should have appropriate skills in order to manage their classroom behaviours. Moreover, they should plan according to learners' various learning styles, needs and differences. Lastly, they have to assess their learners according to their abilities. It seemed that all the in-service teachers had knowledge of their learners' developmental phase as they categorised them in groups of those who could speak only, and those who could read and write. Knowing their learners enabled in-service teachers to plan and choose appropriate teaching methods and activities that suited the learners' abilities in their teaching of literacy and Braille. **Teacher Lefiso** and **Teacher Moleboheng** were able to select specific letters of the alphabet during their teaching. Apart from teaching the specific letters of the alphabet, **Teacher Moleboheng** further engaged her learners in spelling out words which can be regarded as teaching phonics, although she did not put any emphasis on phonics and letter sounds.

All the in-service teachers that participated used question and answer techniques quite often; hence they reinforced oral language which is considered one of the important literacy concepts. However, their teaching strategies denied learners opportunities to socially construct their knowledge as there was no indication of literacy concepts in their classrooms where learners could learn independently and in their own time. Again, the teachers did not engage all the learners in their assessment strategies as they merely called some learners by name to answer while other learners were not allowed to volunteer responses. Except for **Teacher Moleboheng** whose learners sang a body parts song and who allowed her learners to touch and show the parts, the activities in which the in-service teachers engaged their learners did not link their real-life experiences with the content they were learning so that new knowledge could be constructed, as suggested by Vygotsky (1978).

Koehler and Mishra (2009) posit that teachers should also retain pedagogical content knowledge which will enable them to vary their teaching and learning strategies, such as using discussion, explanation, role-play, games, demonstrations, and discovery that will assist learners to understand literacy concepts better. **Teacher Moleboheng** came closest to this requirement because she engaged her learners in exploration, discovery and manipulation in search of the body parts and linking literacy (words) to them. She further used explanation where she emphasised that both people and their toys people have body parts. In this manner she demonstrated sound awareness of pedagogical content knowledge which influenced her to link the real-life experiences of the learners to new content by naming, spelling and writing words related to parts.

Koehler and Mishra (2009) further insist that teachers should possess technology knowledge if they want their learners to be technologically literate in this digital age. In this regard, all three the in-service teachers showed good technology knowledge, particularly of Braille, which enabled them to teach learners how to read and write using Braille codes. Apart from teaching Braille codes, they also taught letters of the alphabet. The learners' oral language was developed despite the fact that the emphasis was mostly put on the Braille dots which construct the selected letters of the alphabet. **Teacher Lefiso** and **Teacher Moleboheng** were sequentially teaching specific letters of the alphabet, which showed that their technology knowledge enabled them to teach the Braille dots related to the selected letters of the alphabet. They kept on asking their

learners to say the dots and at the same time they also said the dots to show that letters of the alphabet are made up of the dots not the characters, like in print.

Planning of a lesson is a core element of effective teaching and learning. It has to be effectively done well in advance of the actual teaching and learning process so that the teacher will gather appropriate and suitable teaching and learning materials that will cater for all the different learning abilities and styles. Furthermore, the content to be taught has to be broken into small, teachable units so that learners will understand and attain knowledge. It seemed that **Teacher Tlhohonolofatso** was not well prepared as her teaching activities did not strive to allow learners to acquire specific content knowledge. **Teacher Moleboheng** managed to break her learning activities into small, teachable units. Firstly, she engaged her learners to manipulate and explore toys in search of body parts. Secondly, she allowed her learners to mention and spell out the body parts they found. Lastly, she involved her learners in writing the letters of the alphabet and oral naming of body parts. The findings showed that she had pedagogical content knowledge which allowed her to vary her teaching activities; thus the teaching and learning processes in her class were lively and actively involved the learners.

Assessment is an essential part of teaching and learning of literacy in Grade R because it assists teachers to measure student learning, provides feedback on instruction, and provides a path for modifying and differentiating the subject content (Polly & Hannafin, 2010). All teachers are expected to assess their learners pre-instruction, during, and after the instruction using various assessment tools such as observations, learner portfolios, oral questioning, discussion, advanced checklists, and entrance cards. From my observation all the in-service teachers assessed their learners during and after instruction, though their focus was on Braille dots and it was mostly done orally. My participants seemed to call the active learners by name for responses without allowing others to volunteer. Observation was used during **Teacher Lefiso** and **Teacher Tlhohonolofatso's** lessons while they observed their learners during the selection of an activity where they were expected to choose a correct letter of the alphabet. However, these were shallow observations because not all the learners in the group were observed. They engaged their learners mostly on oral discussion where they asked them to say the dots of letters of the alphabet. During post-interview sessions I tried to find out if the in-service teachers had knowledge about the

assessment of learners. They were asked when they assessed their learners and which observation tools they used. They answered as follows:

Teacher Lefiso:

I assess my lesson during and after teaching in order to find out if the learners have mastered the taught concept even though the assessment that is done during teaching does not involve all the learners. I just pick few of them, sometimes those who raised their hands. Assessment that is done after teaching is helpful, because every learner is included.

Teacher Tlhohonolofatso:

I assess my learners only during teaching.

Teacher Moleboheng:

I assess my learners during my teaching because after teaching assessment we normally have a national standardised test where we assess learners' different skills such as drawing, writing, reading, behavioural skills, social skills, calculating and counting.

Teacher Lefiso: *I sometimes give my learners an activity, then observe while they are performing the activity.*

Teacher Tlhohonolofatso:

I sometimes observe my learners though I don't normally do it. We also have a national standard portfolio for each learner which we fill at the end of each school term to assess literacy, numeracy, gross and fine motor skills, and socialisation skills.

Teacher Moleboheng:

I use observation criteria during my teaching to see if the learners are following the content that I am teaching them.

The above responses showed that the in-service teachers were knowledgeable about learner observation hence their responses generally showed that they were aware that learners should be assessed during and after instruction. However, during their actual teaching they did formative

assessment more often where they asked their learners to state the dots that construct certain letters of the alphabet. Formative assessment was effectively used during the facilitation of teaching literacy. **Teachers Lefiso** and **Moleboheng** even used pre-assessment where they asked their learners to say the letters of the alphabet that they intended to use in the lesson and their meaning. Smith and Throne (2010) specify that pre-assessment determines what learners already know and understand about a particular content. Technology could be used in order to assess learners' prior knowledge. For example, words and letters of the alphabet could be written on play cards using Word or Excel and they could then be textured with different materials for tactile identification. Mishra and Koehler (2006) emphasise the importance of possessing technology knowledge, therefore in-service teachers were also expected to be computer literate apart from being Braille literate so that they could use computers during their teaching to convert printed materials into Braille. This would allow their learners to read and write in a particular subject.

Table 4.1: Summary of Classroom Observations

Criteria	Teacher Lefiso	Teacher Tlhohonolofatso	Teacher Moleboheng
Introduction of the lesson	Specified (letters of the alphabet)	Not specified	Specified (letters of the alphabet)
Lesson objective(s)	Specified according to three tiers discussed	Not clear	Specified according to three tiers discussed
Learners' activities	Effectively used (Braille counters)	Not effectively used (omission of using especially egg container)	Effectively used (Manipulating toys and Braille counters)
Application of various teaching	Exploration, explanation, questions and	Exploration, questions and	Manipulation, discovery, explanation,

strategies (methods)	answers	answers	questions and answers
Teachers' questions (application, knowledge, synthesis, recall)	Oral questions that need recall	Asked recall questions	Asked recall, application questions
Assessment criteria used	Formative and summative assessments	Formative assessment	Pre-assessment, formative and summative assessments
Classroom arrangement and management	Arranged into three groups according to learners' abilities	Arranged into three groups according to learners' abilities	Arranged into three groups according to learners' abilities
Time management	Well managed	Not well managed	Well managed
Conclusion	Concluded her lesson	No conclusion stated	Concluded her lesson

Own illustration

4.3 Document Analysis

4.3.1 Teachers' Documents: Lesson Plans

I embarked on perusing teachers' daily lesson plans in order to add validity and credibility to my data that had been generated through the use of interview sessions and classroom observations. I looked closely at the lesson plan format, cohesion of the lesson objectives, application of various teaching methods, lesson activities and materials used, lesson assessment, and conclusion, as was discussed in Chapter Two.

The respondents used an integrated lesson plan for a week's theme or topic and they then conjoined other subjects during teaching. Their planning showed the integration of Braille concepts and literacy (reading and writing both in English and Sesotho) with the emphasis on

teaching Braille codes and not on literacy concepts. No other subjects seemed to be integrated and every subject was taught as a ‘standalone’.

The lesson plans of the in-service teachers that I perused specified the objectives that they expected their learners to achieve at the end of the lesson. The objectives of the three lesson plans pertained to the different abilities of the learners. Dunn et al. (2010) indicate that a teacher has to consider these learners’ three ‘tiers’ when differentiating the lesson content: tier one is learners with little knowledge about the topic, tier two is learners working at grade level, and tier three is learners who are working above the expected level of readiness for the content. It was clear that the in-service teachers specified their objectives according to those who could speak fluently, those who could read and write letters, and those who could read and write words and sentences. This meant that their objectives reflected the three tiers as posited by Dunn et al. (2010). Moreover, this knowledge was operationalized in the classroom setting where the teachers grouped their learners into three ability groups.

Teacher Lefiso and **Moleboheng’s** objectives were clear, specific and developmental and they were specified according to the tiers stated by Dunn et al. (2010). **Teacher Lefiso’s** objectives were as follows: *to say out the dots which make these letters of the alphabet A, B, K, L and P, write these letters of the alphabet A, B, K, L, P, and make for sign.* **Teacher Moleboheng’s** objectives were as follows: *Name at least five body parts and show them, spell those body parts and write down any two of them.* The objectives of **Teacher Tlhohonolofatso** somehow seemed not to strive to address one topic compared to the other two teachers. She specified different objectives as if she was teaching three different topics in one lesson. She also failed to conclude her activities with the different groups of learners.

The application of various teaching methods was stated in the lesson plans. The teachers specified that they would use grouping, explanation, questions and answers. **Teacher Moleboheng** additionally applied exploration, manipulation and discovery through the activity of naming body parts where toys would be given to the learners for exploration. Exploration, manipulation and discovery were not stipulated in the lesson plan but they were effectively used in the lesson and aroused the learners’ curiosity and interest. She gave her learners ample time and opportunity to explore their toys extensively in order to discover planned ahead of the actual

teaching and learning session. **Teacher Lefiso's** teaching materials were Braille which body parts they possessed.

The lesson activities and materials were all stated in the lesson plans of two of the teachers, namely **Teacher Lefiso** and **Teacher Moleboheng**, whereas **Teacher Tlhohonolofatso's** activities and the materials that she would use were not stated clearly. She even forgot to use other teaching materials during her lesson because she apparently had not counters. **Teacher Moleboheng** specified that she would use people and animal toys for all the learners to explore different body parts, and she also indicated that Braille counters would be explored by the beginners group in search of letters of the alphabet (J and K). The effective teaching and learning materials involved kinaesthetic application while the auditory sense (hearing) was engaged during singing of a song (also a learning style- music and lyrics) and question and answer opportunities.

Teacher Tlhohonolofatso did not conclude her activities or the lesson. Her activities were left hanging, whereas **Teacher Lefiso** recapped her lesson by indicating that letters of the alphabet are constructed of Braille dots. She further asked her learners to say the dots of the letters K and P to find out whether they had gained knowledge. **Teacher Moleboheng** also recapped her lesson by telling her learners that both people and toys have body parts. She concluded by giving her learners different activities according to their different ability levels. However, she did not check the groups that were supposed to write two body parts and those who were asked to write the letters J, K and L of the alphabet in Braille.

4.3.2 Official Documents

4.3.2.1 Literacy Syllabus

Barclay (2014) specifies that a literacy syllabus or curriculum for learners who are visually impaired should encourage a multi-sensory approach for concept development, motor skills development, and auditory and tactual discrimination skills. In this context, the literacy syllabus that I perused focused on the development of the literacy skills of speaking, listening, reading and writing. It was clear that the activities shown in the syllabus were designed for sighted learners because they were colorful and had no tactile symbols or references. The respondents concurred, stating that they had to use a syllabus that was designed for sighted Grade R learners

and that it did not cater for their learners who were visually impaired. Having observed their classrooms and seen that they didn't portray any (or only limited) literacy concepts, one may conclude that the syllabus, which is intended for sighted learners, contributed significantly to their limited knowledge of pedagogical content knowledge, mainly because it appeared that these teachers were poorly guided in creating activities suitable for VI learners. In particular, they lacked creativity to adapt the syllabus to suit their learners' needs. Furthermore, the physical design of the classrooms, particularly the limited space, hindered them from establishing different learning zones to accommodate learners' independent learning needs. The latter oversight should be addressed by the Ministry of Education.

4.3.2.2 Braille Syllabus

The Braille syllabus that I perused at Bartimia Primary School was the *Standard English Braille* (Royal National Institute for the Blind, 1992) version. The in-service teachers claimed that they were using SEB because they had never heard about the newly implemented syllabus and they had never attended any workshops or courses that could update them in terms of changes that might be implemented in Braille. The impact of using an outdated Braille syllabus was clear, as the teachers were teaching predominantly alphabetic Braille in Grade R. Alphabetic Braille has no specific rules to abide by, whereas the new Braille version has simplified the contractions that seem to cause a lot of confusion for many Braille beginners, and in this context it will be far better for use by Grade R teachers. Koehler and Mishra (2009) insist that teachers should possess both content and technology knowledge. This implies that they should be knowledgeable about the concepts of Braille as a tool to teach VI learners, and it follows that they should also be knowledgeable about the changes that are taking place so as to offer their learners the best possible learning opportunities.

4.4 Conclusion

This chapter presented a discussion of the study findings based on the interviews, classroom observations and document analysis. Four main themes emerged from the interview data, namely: teachers' pedagogical content knowledge of teaching literacy concepts, teachers' technological knowledge of teaching literacy using Braille, teachers' situational knowledge of learners and their learning styles, and lastly, teachers' content knowledge of using concrete

objects in teaching and learning. The presentation of the emerging themes was followed by a brief discussion of the theory that framed the study.

My observations of the respondents during their actual teaching revealed that that they focused predominantly on teaching Braille concepts rather than on teaching Literacy as a subject. They failed to integrate Braille in their teaching of literacy concepts and hence they taught Braille as a standalone subject and not as a tool for blind people to learn how to read and write. The in-service teachers seemed to have a limited grasp of content knowledge (i.e., Literacy as a subject), pedagogical content knowledge, and pedagogical knowledge. They failed to use a variety of teaching aides.

I also perused relevant documents in order to add validity to the data that had been generated from the interviews and classroom observations. The documents that I perused were teachers' daily lesson plans and the available Literacy and Braille syllabuses. It was clear that the teachers' lesson plans omitted mention of strategies that would be used to assess the learners. Moreover, the Literacy syllabus that they used seemed to be designed for learners who are sighted. This meant that the teachers were hindered in their efforts to create activities that would be appropriate for their learners who were visually impaired. I also observed that the teachers were using the *Standard English Braille* syllabus which is supposed to be completely phased out by the year 2016 by all English speaking countries. Most countries globally have diverted to Unified English Braille (UEB) because it has simplified the contractions that seem to cause a lot of confusion for many Braille beginners, transcribers and teachers. UEB has further implemented one universal code for various subjects, whereas SEB uses different codes for different subjects. The following chapter will present a summary of the findings and my recommendations, and implications for future research.

Chapter Five

Summary of the Study and Recommendations

5.1 Introduction

The previous chapter presented the data that were generated by means of my engagement with three Grade R teachers who were using Braille to teach Literacy to visually impaired Grade R learners. They were purposively sampled as they fitted the requirements to address the research questions. The generated data were presented and analysed with reference to emergent themes for ease of reading and understanding. This is the final chapter and it presents a summative discussion of the findings, followed by my recommendations and the implications for future research.

5.2 Summary of the Study

This study explored in-service teachers' knowledge of using Braille to teach literacy to VI Grade R learners. It was guided by two research questions: (i) what knowledge do in-service teachers using Braille have for teaching literacy to visually impaired Grade R learners? (ii) How does in-service teachers' knowledge of teaching literacy when using Braille influence their literacy teaching to visually impaired Grade R learners?

In order to understand how the teaching of literacy is supposed to be conducted in a diverse classroom environment, I reviewed previous and current published theses, dissertations, books, e-books and scholarly articles. In the first instance, the literature review illuminated Koehler and Mishra's theory of teacher knowledge of technology integration, which was an appropriate theoretical framework within which I could locate the study.

Secondly, the reviewed literature clarified that literacy among VI learners is not acquired through a teacher-centred approach, but by means of learner-centred activities. Manipulation, exploration, auditory stimuli and free play are only some of the vital components of literacy acquisition in any Grade R classroom, and more specifically in the classroom for VI learners who lack the vital sense of sight. For example, the literature insists that classroom decorations should portray literacy with textures and sounds that are presented in both print and Braille to

enable the learners who are visually impaired to learn easily by exploring in an inclusive classroom.

The study focused on one case of a school in Lesotho where three in-service teachers were interviewed and observed during teaching literacy using Braille codes. For triangulation purposes, I further perused relevant documents to add validity to my study. In this context I perused the teachers' daily lesson plans and the Literacy and Braille syllabuses used in the school. This study employed an interpretive paradigm and was underpinned by a qualitative approach. Based on the findings, I concluded that the in-service teachers showed limited knowledge of some of the domains of teachers' knowledge of technology integration, as advocated by Koehler and Mishra (2009), such as content knowledge, pedagogical knowledge, and pedagogical content knowledge. They showed good knowledge of technology (i.e., Braille codes and tools) although they failed to effectively integrate Braille (i.e., technology) with their teaching of literacy. They taught Braille as a 'standalone' subject whereas it is supposed to be integrated and emphasised in other subjects as well as in literacy teaching.

5.3 In-service Teachers' Limited Content Knowledge

Mishra and Koehler (2009) allude to the fact that it is essential for all teachers to possess knowledge of important concepts, skills and facts of a particular subject in a certain grade. Therefore knowledge of Literacy as a fundamental subject in the Foundation Phase is crucial for all in-service teachers of Grade R learners. However, the findings based on the interview sessions and classroom observations revealed that the in-service teachers had limited content knowledge of Literacy as a subject. During their actual teaching, the in-service teachers focused predominantly on Braille concepts by instructing their learners to say Braille dots orally. The emphasis was not put on phonics, letter sounds or whole-word concepts during their 'literacy' teaching. However, teacher Moleboheng was an exception because during her teaching she instructed her learners to spell out names of body parts, although she did not put any emphasis on letter sounds. With reference to this finding, I recommend that in-service teachers meet quarterly to discuss the important elements of Literacy as a subject and methods to teach it in an integrated manner. Teachers should also discuss possible activities to actively engage all learners in each lesson. This will ensure that learners acquire literacy skills throughout the academic school day.

5.4 Pedagogical Knowledge and Pedagogical Content Knowledge

Pedagogical knowledge (PK) is teacher's knowledge of teaching and learning methods, practices and processes that are used in order to construct knowledge (Ball, Thames & Phelps, 2008; Shulman, 1986). Machado and Botnarescue, (2011) further postulate that the activities planned should provide an active exploration linked to learners' prior knowledge outside their classroom experiences. This means that, in order to construct knowledge, in-service teachers are expected to use a variety of teaching methods and materials to ensure that they accommodate all learners in their classrooms during instruction. However, the teachers in this study seemed to rely predominantly on two teaching strategies (question and answer) where learners were asked to say the dots of the letters of the alphabet. The selection of suitable teaching materials was another challenge that I noticed because the teachers seemed to rely predominantly on Braille counters. However, **teacher Moleboheng** varied her learning materials by using different toys for her learners to search for body parts and engaged different teaching strategies such as discovery, manipulation and exploration, although these strategies had not been specified in her lesson plan. She used them most effectively, however, and aroused the learners' curiosity to learn and discover. It is advisable that teachers vary their teaching materials as well as teaching methods which will arouse learners' curiosity and encourage independent learning during school routines. Therefore, I recommend that in-service teachers meet fortnightly to discuss different teaching methods and to share ideas and materials.

Pedagogical content knowledge is knowledge of pedagogy that is suitable for specific subject matter knowledge (Shulman, 1987). I had expected that the in-service teachers participating in my study would be knowledgeable about Literacy as a subject. In this context I expected them to be able to discover diverse techniques to represent the subject content, to create adaptations despite the limitations of the syllabus, and to tailor the teaching and learning materials and activities to the needs of their diverse learners. However, they seemed to show a limited knowledge on varying their pedagogy. Therefore, I would recommend that the Ministry of Education and Training in Lesotho holds regular workshops where literacy concepts and different strategies of teaching young Grade R learners who are visually impaired will be addressed. Various stakeholders should be invited to participate in these workshops. They should be held on a quarterly basis in order to update and introduce in-service teachers to different

educational theorists who can disclose how young children, including those who are visually impaired, acquire literacy skills. Furthermore, in-service teachers need to have refresher courses where they will exchange ideas in dealing with learners who are visually impaired and where they will also gain knowledge on the changes that might occur in Braille codes and Braille technologies. Braille needs continuous updating as it is a technology and fluctuates when there are new implementations.

5.5 Literacy Enriched Classroom

Gurney (2007) clarifies that an enriched literacy classroom promotes learners' curiosity to discover, manipulate and learn independently. Braille writing materials should be scattered all over the learning centres to ensure that learners come into contact with literacy concepts all the time. Learners should practise writing skills such as doodling, scribbling, and holding the stylus and slate properly. However, in this study the in-service teachers' classrooms did not have different learning centres such as a writing centre to stimulate and encourage learners to participate in literacy lessons effectively on their own. Their classrooms were not literacy-friendly. No textured pictures were displayed in the classrooms and nor were there any activity centres with literacy concepts written in Braille to encourage independent learning. Therefore, I recommend that in-service teachers fortnightly come together and prepare teaching and learning aids so that their classrooms will facilitate independent learning to take place effectively.

Planning is an essential part of effective teaching and learning as far as teaching is concerned. Planning assists teachers to notice teachable moments when they arise. Ertmer and Ottenbreit-Leftwich, (2010) postulate that during planning a teacher has to state how technological tools will be used to assist learners achieve and demonstrate lesson goals and the objectives of the curriculum. When perusing the in-service teachers' daily lesson plans, I noticed that they did not specify how they would use Braille counters. In most instances their teaching and learning methods did not arouse learners' curiosity to learn literacy. They were inhibited by their lack of planning and for this reason they could not facilitate literacy instruction effectively.

Polly and Hannafin, (2010) specify that assessment plays a major part in effective teaching because it measures student learning, provides feedback on instruction, and provides a path for

modifying and differentiating the curriculum. Consequently, teachers should make use of various assessment tools such as learners' portfolios, observations, and checklists that will deeply assess learners' physical, social, intellectual, emotional and curriculum development. The in-service teachers in this study seemed to assess curriculum development, particularly Braille concepts, that were chanted orally. The physical, emotional, and social development aspects of learning were not effectively assessed; therefore I recommend that the Ministry of Education and Training, through its Teacher Training College, hold assessment workshops where teachers will be equipped with knowledge of various assessment tools and their use.

5.6 Teachers' Initial Training in Special Education

It is common knowledge among Lesotho's people that Bartimia Primary School is one of the few primary schools so far that accommodates learners with visual impairments and where Braille is used as a mode of written communication. Most of the younger learners who were accommodated there at the time of the study seemed to be new in the school environment because they had never attended any pre-school or home-based care centres due to their disability. However, those who became blind at a later age and while they were attending the mainstream schools in their communities were the exception. Some had never been exposed to the community while others had always been sheltered in their homes; as a result, they revealed unusual behaviours which needed immediate interventions and corrections. In many cases the teachers had to train the children from scratch, commencing with daily living activities and school routines before they could teach the National Education curriculum. This process is time consuming and, in my experience, requires at least two teachers (or a teacher and an assistant) in one class. I thus recommend that the government of Lesotho, through its Teachers Training College and university, implement full- and part-time programmes to train Early Childhood Development (ECD) teachers in Special Education, with specific attention to different disabilities and different strategies for teaching such learners. The implementation of such programmes will equip initial and in-service teachers with appropriate skills in dealing with learners who live with different disabilities, such as learners with VI, where they will be taught Braille, orientation, mobility and daily living skills. It will further assist the Ministry of Education and Training to have qualified ECD teachers in various disabilities throughout the country, which will ease the burden of the teachers at Bartimia Primary School.

Henceforth, the Lesotho's Ministry of Education and Training should ensure that there are early childhood centres and pre-schools all over the country for learners with different disabilities so that when they come to special schools like Bartimia Primary School, at least they are not new in the school environment and they will not take three years to progress from Grade R to Grade 1. Such training will further equip in-service and initial teachers with IEP requirements which will assist them to know their learners' strengths, weaknesses and also how to deal with an individual learner.

5.7 Future Implications of the Study

This study was restricted to an exploration of three in-service teachers of Grade R classes in one school. Future studies in this field should cover a wider area to include Foundation Phase teachers from home-based care centres and primary schools. Research topics emphasis could be on Foundation Phase teachers' content knowledge to teach literacy, and Foundation Phase teachers' knowledge of technology to teach Braille. Further studies could involve a larger number of schools and respondents. This study could be replicated in a wider area; that is, researchers could look at schools in other geographical areas for comparative studies.

5.8 Conclusion

This chapter presented a summary of the study and the main findings. I concluded that the in-service teachers participating in this study had shown limited knowledge of content knowledge of Literacy as subject. Their limited content knowledge had a negative impact in their teaching of literacy using Braille, as they focused on teaching Braille letters separately. They taught Braille as a 'standalone' subject, whereas it is supposed to be integrated in literacy teaching. I made a number of recommendations based on my findings. One recommendation is that the Ministry of Education and Training, through its Teachers Training College, should implement a programme to train teachers in different disabilities and strategies in dealing with learners living with various disabilities. I further recommended that in-service teachers meet quarterly in order to address the lack of sound teaching strategies and materials so that teaching of Literacy will effectively take place in literacy enriched classroom environments.

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THE KINGDOM OF LESOTHO
MINISTRY OF EDUCATION AND TRAINING
MASERU DISTRICT EDUCATION OFFICE
P.O. BOX 47, MASERU 100.
TEL: 22 313 709 / 22 322 755

29 June 2015

The Chairperson
HSSREC Research Officer
University of KwaZulu-Natal
GovanBHEKI Building

Westville Campus

Dear Sir/Madm

Re: Permission to conduct a study at St.Benedette Resource Centre for the Blind

Kindly be informed that Matiekase Angelina Kao of student number 213573637 had been granted a permission to conduct a study at St.Benadette Resource Centre for the Blind. Her project tittle is exploring in-service teachers' knowledge of teaching literacy using braille to grade R visually impaired learners. The purpose of her study is to explore how in-service teachers teach literacy using braille to grade R visually impaired learners.

I thank you.

Yours faithfully

LEPEKOLA RALIBAKHA (MR)
SENIOR EDUCATION OFFICER-MASERU



St. Bernadette Resource Centre for the Blind

P. O Box 200

Maseru 100

29th June 2015

Chairperson

HSSREC Research Office

University of KwaZulu-Natal

Govan Bheki Building

Westville Campus

Dear sir/madam

Re: permission to conduct a study at our school

Kindly be informed that Matiekase Angelina Kao of student number 213573637 had been granted a permission to conduct her study at St. Bernadette Resource Centre for the Blind. Her project title is **exploring in-service teachers' knowledge of teaching literacy using Braille to grade R visually impaired learners**. The purpose of her study is to explore how in-service teachers teach literacy using braille to grade R visually impaired learners.

Yours faithfully



Mary Patisi (School principal)

Telephone number: 22317682

PARTICIPANTS' REQUEST LETTER

UKZN-Edgewood Campus
Private Bag X03
Ashwood
3605

.....

Dear participant

I am currently enrolled with University of KwaZulu-Natal pursuing my Master of Education-Early Childhood Development degree. One of the requirements is to conduct a study. Therefore I request you to participate voluntarily in my study which will be conducted at your school. My study topic is exploring practicing teachers' knowledge in teaching literacy using braille to grade R visually impaired learners.

The purpose of my study is to explore in-service teachers' knowledge of teaching literacy using braille to grade R visually impaired learners. As a participant you will be interviewed, observed and your lesson plan will be analyzed. The participation is not compulsory and subject to consent form. You are free to withdraw from the study at any stage. Your rights will be safeguarded in relation to confidentiality of the information you provide. The information you will offer will only be used for my study purposes. Therefore your name and school will not be disclosed in any way instead pseudonyms will be used. During interview if you feel like not answering you have that right to remain silence. I hope my study results will benefit you in your daily teaching and learning of literacy using braille. My contact details and those of my supervisor are provided below in case you may need clarification of my study. If you allow me to conduct the study please fill-in the consent form below.

Yours Faithfully

Matiekase Angelina Kao

Mobile numbers: +27 604715653 (RSA)

: +266 63280106/57327561 (Lesotho)

Email address: matiekasekao@yahoo.com

Jabulile Patience Mzimela (Supervisor)

Mobile number: +27 733248882

Telephone :

Email address: mzimelaj@ukzn.ac.za



Dear Participant

INFORMED CONSENT LETTER

My name is **Matiekase Angelina Kao**, I am an Early Childhood Development MED candidate studying at the University of KwaZulu-Natal, Edgewood campus, South Africa.

I am interested in understanding how in-service teachers' teach literacy using braille to grade R visually impaired learners. I am studying a case of one school where the grade R visually impaired learners attend. To gather the information, I am interested in asking you some questions observe you in real teaching and analyse your lesson plans and literacy syllabus that you are using to teach grade R visually impaired learners.

Please note that:

- Your confidentiality is guaranteed as your inputs will not be attributed to you in person, but reported only as a population member opinion.
- The interview may last for thirty minutes and may be split depending on your preference.
- Any information given by you cannot be used against you, and the collected data will be used for purposes of this research only.
- Data will be stored in secure storage at my supervisor's locked locker and will be destroyed after 5 years.
- You have a choice to participate, not participate or stop participating in the research. You will not be penalized for taking such an action.
- The research aims at exploring in-service teachers' knowledge of teaching literacy using braille to grade R visually impaired learners and to understand how in-service teachers'

knowledge influence their literacy teaching using braille to grade R visually impaired learners.

- Your involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you are willing to be interviewed, please indicate (by ticking as applicable) whether or not you are willing to allow the interview to be recorded by the following equipment:

	willing	Not willing
Audio equipment		
Photographic equipment		
Video equipment		

I can be contacted at:

Email: matiekasekao@yahoo.com/matiekasekao@gmail.com

Cell: +27604715653 or +26663280106

My supervisor is Miss Jabulile Patience Mzimela who is located at the School of Humanities, College of Education at Edgewood campus of the University of KwaZulu-Natal.

Contact details: Email: mzimelaj@ukzn.ac.za

Telephone number: 031 260 3807.

You may also contact the Research Office through:

Mr. P. Mohun

HSSREC Research Office,

Tel: 031 260 4557 E-mail: mohunp@ukzn.ac.za

Thank you for your contribution to this research.

DECLARATION

I..... (full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

.....

RESEARCH SKILLS DEVELOPMENT SERVICES CC

DECLARATION OF PROOF-READING

CC reg. no CK /16841/23	Tax ref. no. 9249/355/20/8
Name: N.D. Coertze Tel. 0833440706	<u>Residential Address:</u> 8 Dreyer Street Panorama Park Illovo Beach
<u>Postal Address:</u> P.O. Box 5432 Winklespruit 4145	

TO WHOM IT MAY CONCERN

I, NICOLINA D. COERTZE, declare that I carefully perused the following Master's dissertation for linguistic errors. I have, to the best of my knowledge, identified typographic, syntactic, idiomatic, punctuation and convention errors and made recommendations to the author regarding their review and correction.

Author: MATIEKASE KAO

Purpose: Master's Degree in EDUCATION

UNIVERSITY OF KWAZULU-NATAL EDGEWOOD CAMPUS

Title of Dissertation:

Grade R in-service teachers' knowledge of using Braille to teach Literacy to Grade R visually impaired learners.

Respectfully submitted on the 14th of December 2014.

N.D. COERTZE

B.A (English and History), THED, B.Ed.

Appendix C

Interview schedule

1. Which are the main literacy concepts that could be taught to grade R learners with visual impairments? Give one example under each literacy concept.
2. Which methods do you use to teach literacy to grade R visually impaired learners?
3. How do you arrange your grade R visually impaired learners when teaching literacy? Do you arrange your learners according to different learning styles or ages?
4. How long have you been teaching in a teaching profession? How long have you been teaching learners with visual impairments?
5. How does your grade R visually impaired learners know how to read and write?
6. Which braille tools do you use to teach literacy to learners who are visually impaired?
7. Do you start with Alphabetic Braille or Contracted Braille when teaching literacy?
8. What do you think are some of the things a teacher has to know when teaching literacy to grade R learners who are visually impaired?
9. Do you think there is any difference in teaching literacy using braille to grade R learners who are visually impaired to grade R learners who are sighted?

Observation Schedule

Teacher:

Subject:

Grade:

Topic:

Number of learners:

Date:

Criteria	Comments
Introduction of the lesson	
Lesson objective (s)	
Learners' activities	
Application of various teaching and learning (methods)	
Teachers' questions (application, knowledge, synthesis, recall)	
Assessment criteria used	
Classroom arrangement and management	
Time management	
Conclusion	