



UNIVERSITEIT VAN PRETORIA  
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YUNIBESITHI YA PRETORIA

**LEARNERS' PERCEPTIONS OF LEARNING SCIENCE IN AN INFORMAL  
LEARNING ENVIRONMENT: A PHENOMENOGRAPHIC STUDY**

**PATRICIA PHOTO**

**2022**



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Learners' perceptions of learning science in an informal learning environment: a  
phenomenographic study

By

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Submitted in fulfilment of the requirement for the degree

PHILOSOPHIAE DOCTOR

(Science, Technology and Mathematics Education)

Faculty of Education

University of Pretoria

South Africa

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**April 2022**



## DECLARATION

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I declare that:

**“Learners’ perceptions of learning science in an informal learning environment: a phenomenographic study”** is my own work. The sources that I have used and quoted in this study have been acknowledged by means of a complete reference.

Signed: 

Date: April 2022





## DEDICATION

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This work is dedicated to my mother Johanna Makhubele and my late father Edward Khomisani Makhubele who encouraged and motivated me to get educated.





## ETHICS CLEARANCE



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### RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE	CLEARANCE NUMBER: <b>UP 17/07/02 Abrie 18-001</b>
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CHAIRPERSON OF ETHICS COMMITTEE:	Prof Funke Omidire
	
CC	Ms Thandi Mngomezulu Dr Mia Abrie

This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (D08) which specifies details regarding:

- Compliance with approved research protocol,
- No significant changes,
- Informed consent/assent,
- Adverse experience or undue risk,
- Registered title, and
- Data storage requirements.





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## DECLARATION BY LANGUAGE EDITOR

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12 April 2022

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Dear Sir/Madam,

Declaration of language editing

I, Dr. Eden Padayachee, hereby declare that I have personally read through the research assignment of Patricia Photo and have highlighted language errors and performed technical editing.

Yours sincerely

Dr. Eden Padayachee





## ABSTRACT

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Literature shows that learning in informal learning environments has a long-term impact on learners' perceptions of science. The informal learning environments are perceived as providing learners with various opportunities such as pursuing their interests, achieving science goals and learners' motivation to learn is increased (Ching-Huei, Wen-Pi, Kun & Chin-Wen; 2022). It is for this reason that this phenomenographic study aimed to explore the influence of learners' perceptions of learning science in an informal learning environment, such as the National Zoological Gardens. This phenomenographic study was further encouraged by the gap in South African literature in understanding how learners learn science in an informal learning environment.

The study was qualitative in nature and made use of a phenomenographic research design. An interpretive viewpoint was used as a paradigm that guided this study. Ten teachers and thirty-five learners participated in the study and were conveniently selected. For a detailed understanding of learners' perceptions of learning science in the National Zoological Gardens, teachers were considered to be important in this study. Data were collected through semi-structured interviews, observations and drawings. The interviews were tape-recorded and transcribed verbatim. The data from the three data collection sources were analysed and reported in an integrated way through the research questions.

The conceptual framework of this study was based on Learning Outside the Classroom (LOtC). The LOtC model describes the five domains that impact learners' learning in informal environments (Malone, 2008). This framework was used to analyse the findings that emerged from this study. The findings of this study identified a lack of cooperation between the Department of Education, schools, teachers and the educational staff at the zoological gardens. The teachers in this study displayed to have inadequate knowledge regarding planning effective experiences for their learners' learning in an informal learning environments such as the zoological gardens. These teachers influenced their learners negatively. Learners could not link the experience at the zoological gardens with the science curriculum studied in the





classroom. Learners' knowledge learned at the zoological gardens was limited and short term. For teachers to improve their planning that will positively influence learners' learning of science, this study has proposed a model to consider and has implications for policymakers, schools, teachers and the educational staff at the zoological gardens.

**Key words:** Informal learning environment, learning outside the classroom, National Zoological Gardens, science learning, primary school, zoo





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## CHAPTER ONE: ORIENTATION TO THE STUDY

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*“Live as if you were to die tomorrow. Learn as if you were to live forever.”*

*-Mahatma Gandhi*

### 1.1 Introduction and background

The main purpose of a phenomenographic study is to recognise and describe perceptions of reality as truly as possible (Larsson & Holmstrom, 2007). The more realistic we are about the perception of an aspect of reality, “the better we can understand learning” (Hasselgren & Beach, 1997). The purpose of this study was to explore the influence of learners’ perceptions of learning science in informal learning environments such as the National Zoological Gardens.

Informal learning environments in this study referred to environmental experiences that take place outside the formal classroom setting. This can occur in museums, zoological gardens, aquaria, technology centres, and designated school science sites (Ching-Huei et al., 2022; Gerber, Cavallo, & Marek, 2001). This study focused on zoological gardens as an informal environment.

Research has shown that informal learning environments such as the zoological gardens are familiar places where schoolteachers take learners especially during their primary school years (Baruzzi, 2022; Tunnicliffe, 1994). Some researchers such as Gardner (1991) argued that informal learning environments have the potential to excite learners, engage learners, inspire learners to learn more and most prominently, teaches learners to be responsible for their learning. Informal learning affects learners’ life experiences, learners’ achievements in schools and the way learners function in society (Eshach, 2007). According to the National Research Council (1996 in Eshach, 2007:171), informal learning can “contribute greatly to the understanding of science and encourage learners to further their interest outside of school.

Literature reveals that it is less known how learners perceive learning science in informal environments especially in South Africa. Hence this study sought to explore the influence of learners’ perceptions of learning science in an informal environment.





Literature (Mosabala, 2014; Lin & Lee, 2014; Eshach, 2007) shows that learning in informal learning environments has more benefits to science education than classroom learning. Teaching inside the classroom is now considered outdated and informal learning environments have taken the possibility of engaging learners, teaching learners, motivating learners' understanding, and most important, "to help them assume responsibility for their future learning" (Eshach, 2007: 171).

The South African curriculum known as the Curriculum and Assessment Policy Statement (CAPS) in science subjects supports the use of informal learning environments to improve science learning (Department of Basic Education, 2011). One of the aims of the CAPS in science subjects is to produce learners that use science successfully and show responsibility towards the environment (Department of Basic Education, 2011). The CAPS Natural Science and Technology Grade 4-6 syllabus has been designed in a manner that promotes learners' understanding of the natural world through, "observation, testing and proving of ideas" (Department of Basic Education, 2011: 8). The syllabus addresses that Science and Technology have a major influence in the world, both negative and positive. Knowledge changes over time, just like all the pieces of knowledge (Department of Basic Education, 2011). Scientific knowledge changes too, hence it is important to acquire new information (Eshach, 2007).

When teaching science, the CAPS Natural Science and Technology Grade 4-6 syllabus states that learners need to be provided with an opportunity that ensures the following:

- *"Enjoyment and curiosity about the world and natural phenomena.*
- *the history of science and the relationship between Natural Sciences and Technology and other subjects.*
- *the contribution of Science and Technology to social justice and societal development.*
- *the need for using scientific and technological knowledge responsibly in the interest of ourselves, society and the environment.*
- *preparation for active participation in a democratic society that values human rights and promotes responsibility towards the environment. Natural Sciences and*



*Technology can also prepare learners for economic activity and self-expression”*  
(Department of Basic Education, 2011:8-9).

For learners to be provided with the opportunities stated in the CAPS document, research shows that interactions in the zoological gardens could play an important role in Science Education. Zoological gardens have the ability to improve learners’ understanding of the natural world (Gutierrez de White & Jacobson, 1994). When learners in primary schools are exposed to learning in the zoological gardens, that result in cognitive gain (Gutierrez de White & Jacobson, 1994). Other voices from literature (Bowker, 2002) reveal that when learners view animals live, that has a “powerful impact” on learners constructing new knowledge and understanding of wildlife of the natural world. Furthermore, a regular visit to the zoological gardens may enhance learners’ knowledge and awareness of environmental science (Jensen, 2011; Bowker, 2002).

Visits to the zoological gardens can also develop positive self-confidence in learners towards learning science (Bowker, 2002). As a result of an increased self-confidence, learners’ interest and eagerness for their science lessons increases (Jensen, 2011; Bowker, 2002). In addition, a visit to zoological gardens have the ability to encourage learners’ positive attitude towards the environment (Gutierrez de White & Jacobson, 1994).

According to Randler, Kummer and Wilhelm (2012) and Gutierrez de White and Jacobson (1994), zoological gardens alone may not be enough to increase science knowledge because teachers perceive the field trips as an enhancement to classroom teaching. Unfortunately, there is little research conducted on using informal learning environments to enhance science classroom teaching, further research is suggested in this field of study. Research also indicated that the use of informal environments is beneficial to learners learning science (Jensen, 2011; Eshach, 2007; Bowker, 2002), however, there are fewer investigations conducted on informal learning environments particularly in South Africa. In this current study, the issue that I explored further was related to the following question: What is the influence of learners’ perceptions of learning science in an informal learning environment such as the National Zoological Gardens?



## 1.2 Problem Statement

International studies (Coll, Coll, & Treagust, 2018; Keil, Haney & Zoffel, 2009) have been conducted where findings describe how using the informal learning environments as a framework for learning influences learners' achievement positively. These studies further reveal that informal learning environments have the ability to do the following:

- *“Improve performance in science and social studies.*
- *Develop learners' abilities to transfer knowledge to new contexts.*
- *Enable learners to “do science” rather than just “learn about science’.*
- *Decrease classroom discipline problems.*
- *Provide all learners with the opportunity to learn at a higher level.*
- *Improve learners reading skills”.*

(Keil, Haney & Zoffel, 2009: 1)

Other voices from research have reported that informal learning environments can lead to learners improvement in learning science (Boileau, 2017; Bamberger & Tal, 2008). The reason why informal learning is effective in science is because it shows learners “real-world experiences, instead of just reading and writing in the classroom” (Coll, Coll, & Treagust, 2018: 21). Through hands-on experiences and real-life linking, learners are likely to understand science subjects better. When learners see the relevance in what they are learning that “helps them to perform better in school exams, tests and projects” (Nadelson & Jordan, 2012; Keil, Haney & Zoffel, 2009).

Informal learning allows learners to open their appreciation to the new environment and new values (Coll, Coll, & Treagust, 2018; Boileau, 2017). Learners who visit an informal learning environment become respectful towards the environment, more concerned and understanding (Nadelson & Jordan, 2012).

Given the obvious benefits of informal learning environments particularly the zoological gardens, it is interesting to consider why South African learners are not performing well in science subjects.

According to Van Staden (2021) and Kriek and Grayson (2009:2), Mathematics, Science and Technology (MST) education “has been a national priority in South Africa for several years now”. However, international measures such as Trends in



International Mathematics and Science Study (TIMSS) show that South African learners are not performing well in science (Reddy, Visser, Winnaar, Arends, Juan & Prinsloo, 2016). The number of Grade 12 learners who pass science subjects remains very low, and many do not meet the requirements for university entrance (Kriek & Grayson, 2009). While studies (National Research Council, 2009) reveal that Grade 12 learners are not doing well in science, researchers emphasise the importance for learners to build a rich understanding of science at a young age in order to do well in their later Grades (National Research Council, 2009). As mentioned earlier, findings of studies conducted internationally have shown that using informal learning environments as a framework for learning influences learners' achievement positively (Coll, Coll, & Treagust, 2018; Keil, Haney, & Zoffel, 2009). Hence in order to understand learners' perceptions, this study sought to explore the influence of learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens.

The literature further reveals that there is a serious predicament in South African Education (Shubani & Mavura, 2022; Nel & Kistner, 2009). This predicament is highlighted by the fact that "approximately 1.1 million learners started their school career in Grade 1 1997, but of these learners only 589 912 Grade 12s wrote their final examination in 2008" (Nel & Kistner, 2009). From these learners who wrote exams, the number of learners who passed science subjects remains very low (Ramphela, 2009 in Nel & Kistner, 2009: 956).

According to Trends in Mathematics and Science Study (TIMSS) that was conducted in 2015 where South Africa participated in Grade 9 level, South Africa has shown some improvement since the previous study that was conducted in 2011 (Reddy et al., 2016). However, in the 2015 study, South Africa still falls below the five lowest-performing countries in science (Reddy et al., 2016). Research furthermore reveals that provincial education officials and several organisations from NGO's (Non-governmental organisations) to businesses have come up with teaching strategies and a variety of interventions to improve science education in South Africa (Kriek & Grayson, 2009). Unfortunately, these strategies are either short term or only once-off and they often lack sound theoretical foundations (Kriek & Grayson, 2009).



Therefore, if a variety of teaching strategies are being implemented, but TIMSS 2015 according to Reddy et al., (2016) still shows that South African learners are performing poorly in science, what is the problem? Additionally in South Africa, the Department of Basic Education is worried due to the huge number of learners' poor performance particularly in science subjects (Muthala, Govender, Kutame & Ajani, 2022). Clearly, teaching strategies that are being used in South African science classrooms are not leading to more competent learners. Better strategies have to be found to improve South African science education. It has been speculated that learning in informal environments can lead to improvement in learners' interest and perceptions of science (Coll & Coll, 2018; Boileau, 2017; Gardner, 1991). However, this remains a speculation in the South African context.

Research shows that learners' performance can be influenced by how they perceive a particular learning task (Alturki & Aldraiweesh, 2022; Tuan, Chin, & Shieh, 2005). If learners perceive a learning task as valuable, they actively engage in it, they develop an interest and they use their prior knowledge with new experience (Ramirez II, Teten, Mamo, Speth, Kettler & Sindelar, 2022; Leggon & Gaines, 2017; Tuan, Chin & Shieh, 2005). Hence this study sought to explore the influence of learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens.

### **1.3 Purpose of the study**

The main purpose of this study was to explore the influence of learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens. This study also intended to fill a gap that exists in the body of knowledge particularly in the context of learning science in informal learning environments in South Africa. As discussed earlier in this study, learning in informal environments has been described as being useful to learners learning science, however, it has not been explored thoroughly in the South African context (Gerber, Cavallo; Marek, 2001; Neathery, 1998). It is less known how learners perceive learning science in informal learning environments. Hence this study sought to explore learners' perceptions of learning science in informal learning environments specifically at the National Zoological Gardens.



## 1.4 Research questions

The following research questions guided this study:

### Main research question

What factors influence learners' perceptions of learning science in an informal learning environment such as the National Zoological Gardens?

### Sub-questions

- How do learners perceive learning science in the National Zoological Gardens?
- How does the visit to the National Zoological Gardens influence learners' learning science?
- How does the visit to the National Zoological Gardens influence learners' attitudes towards learning science?

In exploring the first sub-question, I focused on learners' expectations of going to the zoological gardens, learners' perceptions about learning in the zoological gardens and learners' experiences at the zoological gardens. The second sub-question was explored by focusing on learners' descriptions of knowledge learned at the zoological gardens. In exploring the last sub-question, I focused on learners' responses towards animals, learners' interactions at the zoological gardens and lastly, learners' interest at the zoological gardens.

## 1.5 Rationale of the study

The importance of developing a better understanding of the influence of learners' learning science in the zoological gardens was strong (Boileau, 2017; CAZA, 2015). According to Godinez and Fernandex (2019) and Payne (1998 in Loughland, Reid and Petocz, 2002: 190), it is important to be aware of the influence of learners' perceptions of learning science in informal environments because that will guide the development of a curriculum that "helps learners broaden their understanding" of science.

Research shows that the number of South African Grade 12 learners who pass science subjects remains very low and many do not meet the requirements for a





university entrance (Muthala et al., 2022; Kriek & Grayson, 2009). International studies (Coll, Coll, & Treagust, 2018; Keil, Haney & Zoffel, 2009) have been conducted where findings describe how using an informal environment as a framework for learning influences learners' achievement positively. I wanted to do this study because it could contribute to the development of strategies to improve learners' perceptions of science, learners' achievements, learners' emotional, and personal interest in science subjects in South Africa. This study was conducted in primary schools because research reveals that it is important for learners at a young age to build a rich understanding of science (Jirout & Hlahr, 2012; National Research Council, 2009).

Further rationale for this study was because of the calls made in the literature for more research on learners' perceptions and their experience associated with the zoological gardens (Ramirez II et al., 2022; Hancocks, 2012). These calls were reasonable when considering research of learners' perceptions and related experience at the zoological gardens within the context of Science Education is limited (Ramirez II et al., 2022; Hancocks, 2012). The research that is available on informal learning environments is mostly conducted in museums, little work is done in zoological gardens (Mosabala, 2014; Gerber, Cavallo, & Marek, 2001).

## **1.6 Significance of the study**

The results of this study might contribute to relevant knowledge bases, particularly to those concerned with the theories of learning science in informal learning environments. This study was important to provide information for curriculum developers and teachers pertaining to the factors that influence learners' perceptions of learning science in zoological gardens. When the factors that influence learners' perceptions are shown in this study that might assist teachers and curriculum developers to narrow down the gap that exists between formal learning environments and informal learning environments in science education.

Most empirical research has focused on learning science in informal environments from secondary level to higher level (Grosemans, Boon, Verclairen, Dochy & Kyndt, 2015). Therefore, this study has the potential of expanding on the existing knowledge on learning science in informal environments and put its focus on primary schools. As much as the findings from the empirical research conducted argue that learning in



informal environments is beneficial to science education, there is an urgency to substantiate this claim with more research in primary schools. It is hence significant to note that, apart from building on the existing literature, the researcher aims to develop a model that shows the factors that influence learners' perceptions of learning science in informal learning environments.

## **1.7 Concept clarification**

### *1.7.1 Informal learning environments*

Informal learning environments in this study referred to environmental experiences that take place outside the formal classroom setting. This can occur in museums, zoological gardens, aquaria, technology centres, and designated school science sites (Gerber et al., 2001). This study focused on zoological gardens as an informal learning environment.

### *1.7.2 Informal learning*

Informal learning is learning that occurs outside the classroom setting. It shares a goal with formal learning (classroom learning) (Melber & Abraham, 1999).

### *1.7.3 Formal learning environment*

The formal learning environment in this study is an environment where learning occurs in a planned approach and organised environment such as a classroom. Formal learning environment is structured in terms of "learning context, learning support, learning time and learning objectives" (Kyndt, Govaerts, Verbeek & Dochy, 2014 in Grosemans et al., 2015: 152).

### *1.7.4 Learners*

This is a person who is learning a particular subject, topic or a skill. This person is still in school level (Rogoff, 1994).

## **1.8 Conceptual Framework**

In this section, I briefly explain the conceptual framework that was used to guide this study. A detailed justification is explained in chapter 2. The conceptual framework of this study was based on Learning Outside the Classroom (LOtC) developed by Malone (2008). This model was adapted to suit this study. The LOtC model describes the five domains that have an impact on learners' learning in informal learning environments.





These domains include the emotional domain, personal domain, cognitive domain, physical domain and social domain (Malone, 2008).

### **Emotional domain (children's emotional well-being)**

The emotional domain focuses on learners' relationship with nature. Studies show that when learners are "hands-on contact with nature", that increases their interest and concentration in science (Malone, 2008: 20).

### **Personal domain (children's responses)**

This domain is concerned with the change of behaviour and attitude of learners towards science after the experience in the informal learning environments (Malone, 2008).

### **Cognitive domain (children's learning)**

Malone's (2008) study showed that an informal learning environment improve learners' way of reasoning, especially in science education. The informal learning environment also improves learners' skills and knowledge of the environment and geological literacy is enhanced.

### **Physical domain (children's physical experience)**

Research shows that learners' visits to the informal learning environments increase their physical fitness, and this results in supporting a healthy lifestyle in later years (Malone, 2008; Thompson, Travlou & Roe, 2006).

### **Social domain (children's social interaction)**

In this domain, the benefits include a focus on how learners learn and how they interact during visits to informal learning environments and as a consequence of the experience (Malone, 2008).

## **1.9 Overview of research methodology**

This section presents an outline of the research methodology that was adopted for the study, while the detailed procedures and justifications are discussed in chapter 3.



## **Epistemological paradigm**

This study used interpretivism as a paradigm that guided this study. Reality according to the interpretivist is not concerned with seeking to reveal the ultimate truth, it is subjective and is influenced by the perspective of the situation. The interpretivist believes that there is no one true reality but multiple and socially constructed realities (Pontero, 2005).

Using interpretivism paradigm as a researcher the attempt is neither to “unearth a single truth from the realities of participants nor try to achieve outside verification of his or her analysis” (Pontero, 2005: 130). This paradigm seeks to get an in-depth understanding of participants’ interpretations of reality (Bunniss & Kelly, 2010).

## **Methodological paradigm**

This study used a qualitative research methodology. A qualitative research methodology is often used when a researcher is concerned about the participants’ views and experiences in their natural settings (Stenfors-Hayes, Hult, & Dahlgren, 2013). When a researcher uses qualitative research methodology, the intentions are to better understand; (1) the perspectives and sense of the participants; (2) what made these perspectives, and lastly; (3) “the specific processes that are involved in maintaining or altering these phenomena and relationships” (Stenfors-Hayes, Hult, & Dahlgren, 2013).

In this study, the researcher was concerned about exploring the influence of learners’ perceptions of learning science in informal learning environments such as the National Zoological Gardens.

## **Research design**

The research design that was used to guide this study was phenomenography. This design seeks to describe and interpret diverse ways in which people understand a particular phenomenon (Larsson & Holmstrom, 2007). A phenomenographical research design explores participants’ experiences, interpretations and understanding of an occurrence. The investigation in phenomenographical research design is not “directed at the phenomenon as such but at the variation in peoples’ ways of understanding the phenomenon” (Larsson & Holmstrom, 2007: 56). This research



design was suitable for this study because it sought to explore the influence of learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens.

### **Selection of participants**

Convenience sampling was used to select participants in this study. There were 7 primary schools that participated, five learners in each school participated which gave a total of 35 learners that participated in this study. For a detailed exploration of the influence of learners' perceptions of learning science in the National Zoological Gardens, teachers were considered to be important in this study. Therefore 10 teachers were participants in the study.

### **Data collection**

In gathering data in this study, multiple methods of data collection were used. Data were collected by using semi-structured interviews, observations and drawings. The multiple data collection methods were used in order to provide "a confluence of evidence that breeds credibility" (Eisner, 1991: 58).

### **Data documentation**

The researcher used observation templates and field notes to summarise and write down the information that was recorded during the zoological garden's visits. The participants were audio-recorded during their interviews and that was another way in which data were documented. Lastly, data were documented via the transcriptions of the audio-taped interviews.

### **Data analysis**

For this current study, inductive analysis was used to analyse the collected data (Given, 2008). Inductive analysis was used since the aim was not to use a predetermined theory but to examine themes that were recurring from the collected raw data (Braun & Clarke, 2006).

### **Ethical consideration**

To protect the participants, the following ethical procedures were followed; permission was sought from the Department of Science, Mathematics and Technology defence



committee. This project was part of a larger project on informal learning environments that have received ethics clearance in 2017. The reference number is UP 17/07/02. An amendment was prepared for the ethics committee of the Faculty of Education University of Pretoria. Permission was further sought from Gauteng districts, the Department of Basic Education, school principals, schoolteachers, parents and the National Zoological Gardens at Tshwane.

The researcher informed the participants and principals about their right to withdraw from this study anytime they felt like they do not want to participate anymore. The participants were given pseudonyms. The confidentiality of the participants was taken into consideration by keeping the discussed information confidential.

### **Strategies of enhancing trustworthiness**

To ensure trustworthiness in phenomenographical research, we do not ask questions such as “how well the findings correspond to the existence of the phenomenon” (Stenfors-Hayes, Hult, & Dahlgren, 2013: 266). A phenomenographical study lies on the hypothesis that you cannot describe reality since reality depends on the describer. A phenomenographical study only measures how “well the categories” link to how participants understand the phenomenon (Stenfors-Hayes, Hult, & Dahlgren, 2013). Additionally, Lincoln and Guba’s (1985) procedures of trustworthiness were used specifically, credibility, transferability, dependability and confirmability. These are discussed in more detail in chapter 3.

### **Limitations of the study**

This was a qualitative study and therefore the findings could not be generalised into a broader population. The findings of this study were unique to the participants and the background settings used. Although the study set out to explore learners’ perceptions of learning science in informal learning environments, it focused specifically on learners who were in Grade 3-7. The purpose of this study was not to generalise but to understand the influence of learners’ perceptions of learning science in informal learning environments such as the National Zoological Gardens.

Table 1.1 below illustrates a summary of the research methodology for this study.



**Table 1.1 A summary of the research methodology**

<b>Title</b>	Learners' perceptions of learning science in informal learning environments: a phenomenography study	
<b>Epistemological Paradigm</b>	Interpretivism	
<b>Methodological paradigm</b>	Qualitative research	
<b>Research design</b>	Phenomenography	
<b>Selection of participants</b>	Convenience sampling	7 schools visiting the National Zoological Gardens participated. Learners and teachers were participants. 5 schools were learners from Grade 4-7 and 2 schools were learners in Grade 3.
<b>Data collection</b>	Semi-structured interviews Drawings Observations	
<b>Data documentation</b>	Observation field notes Audio recordings Transcriptions	
<b>Data analysis</b>	Inductive analysis	
<b>Ethical consideration</b>	Ethics clearance, informed consent, confidentiality and anonymity of participants, voluntary participation, rights of withdrawal.	
<b>Strategies of enhancing trustworthiness</b>	Credibility Transferability Dependability Confirmability	

## 1.10 Outline of Chapters

### Chapter 1: Orientation of the study

Chapter 1 provides the orientation of the study about exploring the influence of learners' perceptions of learning science in the Zoological Gardens. In this chapter, I discussed the background of the study, the problem statement, the purpose and the research questions that guided this study. The main research question sought to investigate the factors that influence learners' perceptions of learning science in an



informal learning environment such as the National Zoological Gardens. I also presented the rationale of the study, the benefits and also concepts clarification. Moreover, I gave a brief description of the conceptual framework that was used and an overview of the research methodology. Furthermore, I concluded by outlining the study limitations.

## **Chapter 2: The literature review.**

Chapter 2 presents the literature reviewed in this study about informal learning environments in science classrooms. The literature focuses on topics such as the definition of an informal learning environment. The chapter also explores the characteristics of informal learning. The benefits of informal learning environments on learners' learning science are discussed. The chapter further discusses the barriers and effects of informal learning environments on learners' learning science. Chapter 2 concludes by outlining the conceptual framework that will guide this study.

## **Chapter 3: Research methodology**

In chapter 3 I outline the research methodology that was used to conduct this study. I first describe the interpretive paradigm and explain why it is suitable for in this study. In this chapter, I also detail what the qualitative approach is and explain its suitability for this research study. This study used a phenomenographic research design. I have explained the reasons for using this research design and further provided its strengths and limitations for this study.

## **Chapter 4: Data presentation**

In this chapter I present the data that were collected from the interviews, observations and the drawings. The data presentations are guided by the three sub-questions. The first sub-question presents the data using three categories, namely; learners' expectations of going to the zoological gardens, learners' perceptions about learning in the zoological gardens and learners' experiences at the zoological gardens. The second sub-question presents the data using one category, namely; learners' descriptions of knowledge learned at the zoological gardens. The last sub-question presents the data using three categories, namely; learners' responses towards animals, learners' interactions and learners' interest in the zoological gardens.



## **Chapter 5: Discussion of findings and recommendations**

In chapter 5 I present the scholarly arguments based on the findings of the study. I compare the findings of the study with the literature reviewed. I further discuss the findings by relating the conceptual framework that was used to guide this study. I conclude each section with recommendations.

## **Chapter 6: Conclusions**

This is a concluding chapter. In this chapter I outline the proposed model named “the influence of outdoor learning and possible outcome model”. I have also included some implications for practise amongst institutions such as schools, DBE, National Zoological Gardens and teachers. Similarly, to other research studies, this study had recorded some limitations, and these are explained in this chapter. I conclude the chapter by discussing the recommendations for future research and included my final reflections in this study.

### **1.11 Conclusion**

This chapter has familiarised a reader with the outline of the background of the study, the problem being investigated and the purpose behind the investigation of this study. The rationale behind the investigation of this study is also outlined. This chapter also briefly discussed the methodology and the conceptual framework that guided this study. Additionally, the chapter concludes by providing the summary of the chapters discussions. The next chapter discusses the literature reviewed in this study.



## CHAPTER TWO: LITERATURE REVIEW

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*“Education is the most powerful weapon we can use to change the world”*

*-Nelson Mandela*

### **2.1 Introduction**

As detailed in the previous chapter, the purpose of this study was to explore the influence of learners’ perceptions of learning science in an informal learning environment. In this chapter, I start by exploring the definitions of informal learning environments. To assist the reader in understanding this study’s background, I explore the characteristics, benefits, barriers and the experience of informal learning environments. This is then followed by a discussion of informal learning environment experience in primary schools since this is where data was collected. Since data was also collected in the zoological gardens, I present the history of the South African National zoological garden.

To guide my understanding of learners’ perceptions of learning science in informal learning environments, I discussed the science curriculum in South Africa. Moreover, I have included a relationship between the science curriculum and learning in informal environments. In conclusion, the conceptual framework that guided this study is also discussed in detail.

### **2.2 Informal learning environments**

#### **2.2.2 Definition of informal learning**

To better understand the definition of informal learning, it is imperative to relate it to formal and non-formal learning. Informal learning in literature is mostly defined alongside formal learning and non-formal learning (Ching-Huei et al., 2022; Eshach, 2007). Formal learning can be described as learning that occurs in an organised, sequential, and extremely traditional environment, and informal learning is described as an organised, systematic, and informative activity that occurs outside the formal environment (Boileau, 2017; Wellington, 1990; Coombs & Ahmed, 1974). Non-formal education alternatively is described as a process of lifelong learning where learners gain and gather scientific knowledge, skills, and attitude (Coll & Coll, 2018; Coombs &





Ahmed, 1974). Although non-formal education is appropriate to learning in informal environments such as the zoological gardens, it is not used in literature; the distinction is now between the terms formal learning and informal learning (Fallik et al., 2013; Wellington, 1990).

The literature review provides numerous different definitions of informal learning. For example, Rennie (2007) investigated the terms used for the “latter context” in the literature and found several diverse examples such as learning outside of school, free-choice learning, informal learning and non-formal learning. Crane (1994) explains informal learning as science learning that occurs outside a formal setting (classroom). Crane further states that learning in informal environments does not have a clear link to the prescribed science classroom curriculum. Furthermore, students’ participation in informal learning environments is voluntary (Fuller & France, 2015; Crane, 1994).

Some scholars (Falk, 2005: 271; Fallik, Rosenfeld & Eylon, 2013: 73) argue that previous literature pertaining to the term “informal learning” does not provide convincing evidence that “the fundamental processes of learning differ solely as a function of the physical setting or the institution supporting the learning”. These scholars suggest that the term ‘free-choice learning’ defines informal learning. The characteristics of this learning are recognized in a presence of voluntary learning, self-paced and non-sequential learning which is socially created (Fallik et al., 2013).

Hofstein and Rosenfeld (1996) identifies informal learning “from the more compulsory to the more free-choice setting” and recommend that previously learning in informal environments was linked to classroom learning and pedagogical methods, however, this is no longer the case. Furthermore, Hofstein and Rosenfeld developed the ‘hybrid’ definition. This definition describes that certain “formal” characteristics of learning do take place in informal settings. However, the informal setting is out-of-school, unstructured and occurs voluntarily. Hofstein and Rosenfeld (1996) argue that:

*“There is no clear agreement in the literature regarding the definition of informal science learning... The major difficulty in defining informal science learning is determining whether or not informal science learning can take place within formal settings. In other words, does the term have distinct, clear-cut attributes of its own (in*



*which case it may occur in the formal as well as informal settings) or must this term be understood as necessarily contrasted with formal learning (p.88-89)".*

This study adopted the informal learning definition from Melber and Abraham's (1999) research study. They define informal learning as learning that occurs outside the classroom setting. Informal learning shares a goal with formal learning (classroom learning). A shared goal is to influence learners to develop scientifically and be able to make informed decisions pertaining to the world around them (Melber & Abraham, 1999). When these two realms of learning are combined, learners are provided with a "holistic experience in science". Therefore, learning in informal environments should be linked to classroom learning for learners to experience science learning elaborately (Coll & Coll, 2018).

### **2.2.3 Characteristics of informal learning**

Similar to the definition of informal learning, the literature review provides several characteristics of this term. For instance, Fallik et al., (2013) describe that informal learning characteristics can be summarised into three circumstances, namely; increase in learners' motivation for learning science, increase in learners' conceptions and knowledge of science, and learners develop new scientific skills and abilities. These scholars (Fallik et al., 2013) explore the informal learning characteristics in the following:

#### *Increase learners' motivation for learning science*

Several studies in informal learning have revealed that learners' attitudes towards the prescribed science curriculum in schools are not positive, even when learners recognize the importance of science's concepts and profession (Jenkins & Nelson, 2005; Osborne & Dillon, 2008; Fallik et al., 2013). However, studies have shown that learners with a negative attitude towards school science often actively participate in informal learning environments (Jenkins & Nelson, 2005; Osborne & Dillon, 2008). Therefore, it is recommended that informal learning should be integrated with the school science curriculum to increase learners' motivation towards science.



### *Increase learners' conceptions and knowledge of science*

Literature shows that learning is a “personal and contextual process that continues through a lifetime” (Fallik et al., 2013; Bamberger & Tal, 2008). The literature further shows that learning is an integrated concept; any difference between formal and informal science learning is “artificial” (Walton, 2000). Thus to increase learners’ conceptions and knowledge of science, there must be a linkage between learners’ classroom science learning and informal learning experience in order to integrate the knowledge and skills acquired in those settings (Linn & Eylon, 2006).

### *Learners develop new scientific skills and abilities*

Informal learning is characterised by learners developing new science skills and abilities. Learners in informal learning environments are exposed to activities that develop their scientific skills. After a visit to an informal learning environment, learners become more creative, explore and make informed decisions (Fallik, Eylon & Rosenfeld, 2008). The skills learners learn in informal environments can be integrated into their classroom science learning (Noam, 2003). With informal learning’ characteristics described by Fallik et al., (2013), it was hence important for this current study to investigate the influence of informal environments in learning science, specifically the zoological gardens.

Sharma and Raghuvanshi’s (2020) explanation of the characteristics of informal learning environments differs from Fallik et al., (2013). These scholars (Sharma and Raghuvanshi) state that informal learning is not linked or based on any curriculum. Learning in informal environments is not planned, does not have a schedule, and learning take place only per the need of a learner. Learners are attracted to learning when they visit informal environments, therefore, learning is by their choice and can also be referred to as “pull learning” (Sharma & Raghuvanshi, 2020). Boileau’s (2017) study supports Sharma and Raghuvanshi (2020) descriptions of informal learning environments’ characteristics. He explains that informal learning experience is controlled entirely by a learner (Boileau, 2017). A learner identifies a problem or recognise knowledge and skills gap and participate in learning activities intended to close the gap or mitigate the problem (Boileau, 2017). Additionally, Milligan, Littlejohn and, Margaryan (2014) study also support the characteristic that informal learning can



also be referred to as a “pull approach”; it is characterised by its spontaneous, self-directed, and does not require much planning. They explained that informal learning is controlled by a learner, and it provides “lifelong learning” of 21<sup>st</sup>-century.

A study by Marsick and Volpe (1999) reported that informal learning environments could be summarised by the following characteristics:

- Learning in an informal environment is linked to formal learning (classroom learning).
- Knowledge learners gain in informal learning environments is tacit and is not easily expressed.
- Learning in an informal learning environment is unstructured.
- Learners do not learn consciously.
- Learners’ learning is motivated by their instinct and it is self-directed.
- Learning in informal environments take place in learners day-to-day activities and by “human senses”.

A study conducted by Griffin (1994) also indicated similar informal learning characteristics from Marsick and Volpe’s study. Griffin reported that informal learning is linked to formal learning. Linking formal and informal learning clearly shows the characteristics of informal learning (Griffin, 1994). Griffin differentiation of formal and informal characteristics is similar to how Wellington (1990) defines the two contexts. In addition, non-formal learning has characteristics of both formal and informal learning (Coll & Coll, 2018; Eshach, 2007). The summary of the informal, formal and non-formal learning is summarised in Table 2.1 below (Eshach, 2007; Griffin, 1994):

**Table 2.1: Summary of formal and informal characteristics (Eshach, 2007; Griffin, 1994)**

Formal learning	Informal learning	Non-formal
Structured	Un-structured	Structured
Obligatory	Voluntary	Voluntary
Sequenced	Un-Sequenced	Un-Sequenced
Closed	Open-ended	Closed
Teacher-centred	Learner-centred	Teacher-centred



Individual	Collaborative	Individual
Competitive	Non-competitive	Non-competitive
Evaluated	Not evaluated	Not evaluated

In summary, the literature pertaining to the characteristics of informal learning environments seems to suggest that:

- Learning in informal environments is linked to formal learning (classroom-learning).
- Informal learning is characterised by the increase of learners' motivation to learn science and develop new science skills and abilities.
- Learners direct their learning.
- Learners learn through interaction with others (peers, teachers).
- Learning in informal environments is unstructured, open-ended, and voluntary.

#### **2.2.4 Benefits of informal learning**

Literature has revealed that learners spend approximately 86,7% time outside their classroom during their schooling years (Gerber, Cavallo & Marek, 2001). It is hence imperative to investigate the benefits of learners' visits to informal learning environments. This current study sought to understand the influence of the visits to informal learning environments on learners' learning science.

Generally, literature has detailed that informal learning environments have been suggested to be important in encouraging learners' interest in learning science, increasing science knowledge, motivating learners to learn, and encouraging learner/learner and learner/teacher interaction (Patrick, Mathews, & Tunnicliffe, 2013).

According to Eshach (2007), informal learning environments benefit learners' affective and cognitive domains. Fallik et al., (2013:78) explain that the affective domain describes "what motivates the learning process in a learning context". Based on the literature, the affective domain can be identified by categories such as a learning choice, reward for learning, motivation, emotions and self-effectiveness (Ames, 1992; Falk & Dierking, 2002; Vedder-Weiss & Fortus, 2011). Fallik et al., (2013) further state



that an affective domain can be described by comparing formal and informal learning contexts. Table 2.2 below shows the comparison (Fallik et al., 2013:80):

**Table 2.2: A comparison of the affective domain of formal and informal learning contexts (Fallik et al., 2013:80)**

Categories	Formal learning	Informal learning
“Learning choices	Teachers choose what, when, where, and with whom to learn (compulsory learning). A teacher chooses the topics	The learner chooses what, where, and with whom to learn (free-choice learning). The topics are chosen by a learner.
Reward for learning	Learning rewards is the learners’ good grades.	The reward for learning is when a learner succeeds in a given activity.
Motivation	Emphasis on extrinsic inspiration, e.g., a learner feels that learning is imposed, it does not significantly appeal to a learner.	Emphasis on intrinsic inspiration, e.g. a learner feels that the learning is significantly for him/her and it reflects his/her tendencies and needs
Emotions	A learner feels emotions that hinder learning, e.g. boredom, frustration and shame.	A learner feels emotions that promote learning e.g., excitement, arousal, happiness, enjoyment and interest.
Self-effectiveness	A learner generally believes that his/her ability to prosper in learning tasks is low. This is because a learner usually is not successful in the learning tasks.	A learner generally believes that their ability to prosper in learning tasks is high. This is because a learner usually is successful in the learning tasks”.

The cognitive domain is described as learning “content and the mental processes which are emphasised in a learning context” (Fallik et al., 2013:77). Based on the literature, a cognitive domain can be recognised by categories such as; learning content, learning skills, symbols, types of cognition and intellectual tools (Eshach, 2007; Silberman-Keller, 2003; Collins, Brown & Newman, 1989). Table 2.3 below shows the comparison between the cognitive domain in formal and informal settings (Fallik et al., 2013:79):



**Table 2.3: A comparison of the cognitive domain of formal and informal learning contexts (Fallik et al., 2013:79)**

Categories	Formal learning	Informal learning
“Learning content	Emphasis on the cognition relating to disciplinary knowledge (e.g. mathematics, life sciences, history etc.).	Emphasis on cognition relating to the reliable situations (e.g. design challenges, everyday dilemmas, zoo activities etc).
Learning skills	Emphasis on memorisation skills relating to learning content. General skills and knowledge are often taught separately, out of context.	Little emphasis on memorisation. Cognitive and emotional skills are integrated. General skills and knowledge are often integrated with a given context.
Symbols	Emphasis on formal symbols connected to activities such as reading and writing.	Less emphasis on formal symbol systems.
Types of cognition	Emphasis on cognition of individuals	Emphasis on cognitive apprenticeship within communities of practice.
Intellectual tools	Learning is acquired primarily by verbal language. Learning usually starts with the definition of a formal concept and then progress to concrete examples (Top-down approach).	Learning is acquired primarily by experience, observation and demonstration. Learning usually starts with concrete, everyday examples and then progresses to the relevant formal concepts (Bottom-up approach)”.

Eshach (2007) elaborated on the affective and cognitive benefits of learning science in the informal environments in the following:

*Affective domain*

Informal science environments have the ability to increase learners’ science interest, create a sense of wonder; learners become passionate and excited to learn science. Scholars have stated that these areas are neglected in traditional formal school science (science-classrooms) (Eshach, 2007; Pedretti, 2002; Ramey-Gassert, 1996). Ramey-Gassert (1996) further states that, science subjects are mostly viewed as male-dominated in traditional settings; therefore, informal science environments provide learners with opportunities for self-motivated science learning that is non-assessed and also non-threatening for girls as compared to traditional settings.





The visits to informal learning environments play an important role in influencing learners' positive attitudes towards learning science among learners, in boys and even more significantly in girls, which traditional settings neglect. According to Eshach (2007), the representation of science that is presented to young learners (under 12) is important in establishing their attitudes and future science choices. Scientists have appeared to make decisions about their careers in earlier years, thus, learners' positive attitudes towards science in their earlier years is extremely important (Blatchford, 1992). Musgrove and Batcock's (1969) study also found that engineering students, unlike social peers, had decided to study science by the age of 12 years, and they continued to be dedicated to this decision.

Additionally, it is recognised that there is a strong connection between learners' attitudes towards science and learners' performance in the science-classroom. For example, it was revealed that learners with more positive attitudes towards science have shown an increase in concentration to science-classroom teaching and increased participation in science activities (Ching-Huei et al., 2022; Jirout & Hlahr, 2012; Germann, 1988). It was also fascinating to discover that a stronger connection between learners' performance in science and attitude was found in girls than boys (Weinburgh, 1995).

Eshach (2007) reviewed four studies that were conducted in informal learning environments related to the affective domain. Falk (1983) found that informal learning environments are generally enjoyable and result in long-lasting science memories. Harvey (1951 in Hofstein and Rosenfeld, 1996) conducted a study between an experimental group that visited an informal learning environment and a control group. He found that the experimental group performed better than the control group when discussing scientific concepts in a traditional setting (classroom). He further stated that this result was achieved after short informal environment visits.

Another study was conducted pertaining to attitude changes of learners between 10-11 years of age after visiting an informal learning environment (Jarvis & Pell, 2002). These scholars found that immediately after a field trip visit, most learners' science attitudes were more positive. Both girls and boys wanted to follow a science career and this positive attitude "was maintained to a certain extent for several months"





(p.179). Furthermore, these learners showed an increase in science passion and an appreciation of science social context was increased.

In later research, Jarvis and Pell (2005) conducted a study about learners' visits to a science center (National Space Center). They found that this visit promoted learners' interest in space, and their attitude towards science increased for some. However, these scholars found that "teachers' personal interest, preparations, actions during the visit and follow-up activities were important factors in influencing learners' short and long term attitudes" (p.180).

Behrendt and Franklin's (2014) findings were in agreement with Eshach's (2007) study that scientific field trips improve learners' affective domain. They specified that the informal learning environments motivate learners to have a positive attitude for learning and further encourage them to develop a connection between science concepts in the classroom and the scientific field trips. Learners also develop "emotional connections to the subject matter", their curiosity is stimulated, a passion for learning science is increased and also increased concern for the environment and animals (Behrendt & Franklin, 2014). Science scholars state that, when learners' interest and passion is increased, they partake in deeper observations, conduct investigations, surrender to curiosity, "construct more abstract connections" and engage in subject discussions matter with their peers and teachers (Behrendt & Franklin, 2014; Eshach, 2007; Falk & Dierking, 2001).

Curiosity has been defined as "the threshold of desired uncertainty in an environment which leads to exploratory behaviour" (Jirout & Hlahr, 2012: 26). According to Luse and Hsi (2015), curiosity in science can be divided into six categories namely; mechanistic, teleological, inconsistency, cause and effect, engineering or medicine and general knowledge. Table 2.4 below describe the six categories:



**Table 2.4: Curiosity Categories and descriptions (Luse & His, 2015:79)**

Curiosity Category	Description
“Mechanistic	When learners are curious about how something works or how a process occurs.
Teleological	Curiosity about the purpose of things, why things exist, or why processes occur.
Inconsistency	When learners are curious about an observation that is surprising or inconsistent with prior knowledge.
Cause and effect	Wanting to experience to see what will happen or curiosity about whether something does affect or will affect something else.
Engineering or medicine	Curiosity about how things are built, constructed, or made.
General knowledge	When learners are curious about facts, terms, classifications, or general information (discovery).

### *Cognitive domain*

While other scholars described that informal learning environments are not used effectively for learners’ learning science (Waite, 2017; Anderson, 1994; Kubota & Olstad, 1991), others have reasoned that learners have shown to have gained tremendously valuable learning outcomes (Coll, Coll & Treagust, 2018; Guisasola et al., 2009; Ramey-Gassert, 1996), outcomes that last a long-time (Rennie, 1994; Wolins, Jensen & Ulzheimer, 1992). For example, studies conducted by Patrick and Tunnicliffe (2011), and Davidson, Passmore and Anderson (2010), found that learners who visited the informal learning environments mostly outperformed learners who had not visited the informal environments regarding science concepts. Understanding that learners gain science knowledge as a result of a visit to an informal learning environment is important (Eshach, 2007).

Behrendt and Franklin’s (2014) study also support Eshach (2007) findings that informal learning environments improve learners’ cognitive domain. These scholars elaborate that scientific field trips provide learners with the potential to improve their science knowledge and skills. As a result of a field trip, learners’ observation skills are



sharpened, their science perception is increased, and develop a greater science vocabulary (Behrendt & Franklin, 2014). Furthermore, the informal experience stimulates learners to discuss observations, consider science classroom knowledge, simply consider the topic and learners are empowered to start asking questions. Since the informal learning environments are mostly not located in the learners' communities, they also gain knowledge and understanding about their neighbourhoods (Nabors, Edwards & Murray, 2009 in Behrendt & Franklin, 2014).

In summary, despite the evidence of informal learning environments' benefits, these are not guaranteed. Learners may acquire learning that is short term, but without "reinforcement from reflection or debriefing, the learning or interest developed may only be temporary" (Behrendt & Franklin, 2014). According to Falk and Dierking (2002), "short term memory" does not constitute learning. In contrast, a study by Farmer, Knapp, and Benton (2007) suggested that, after one year of a well-planned scientific field trip experience, most learners remembered what they learned, observed and showed newly developed science knowledge. This shows that long-term memory constitute learning. Therefore, science teachers must plan follow-up activities after their learners' visit the informal learning environments.

### **2.2.5 Barriers and negative effects of informal learning environments**

Regardless of the benefits of learners learning in the scientific field trips, there are barriers and negative effects. Research studies have shown that scientific field trips such as museums and zoological gardens present challenges that cannot be ignored (Rennie, 1994; Rennie, 2007; Behrendt & Franklin, 2014). Demonstration of exhibits that are flashy and expensive often obscure the reality of science within the exhibits. A learning potential in scientific field trips may not develop due to chaotic or poorly expressed explanations. According to Rennie (2007), informal learning environments sometimes portray science as relaxed, not challenging and neglecting any science failures and problems scientists experience during their research and findings. Thus, these informal learning environments fail to connect "the scientific process or communication of scientific thought and focus on conclusions rather than the journey or process involved to make the discoveries" (p. 140).



Michie (1998 in Behrendt & Franklin, 2014) mentioned seven barriers related to scientific field trips, namely; field trip transportation, learners' misbehaviours, teachers' experience and training, teacher's preparation, and schools' schedule, lack of support from the school admin, inflexibility of the curriculum and venue options limited. Some of the barriers are explored below:

#### *Field trip transportation*

For teachers to find time to plan scientific field trips and make arrangements for their learners adds a lot of responsibilities to their already busy schedules. Therefore, teachers determining the logistics of their learners' field trip transport who might not even make the trip frustrates teachers. This leads to teachers avoiding planning scientific field trips for their learners (Michie, 1998 in Behrendt & Franklin, 2014).

#### *Learners' misbehaviours*

Teachers are often concerned about their learners' behaviour in scientific field trips. The teachers' biggest concern is losing control of their learners once they arrive at a field trip (Michie, 1998 in Behrendt & Franklin, 2014). When learners arrive on a scientific field trip, they are often disoriented, resulting in uncontrolled behaviour, enthusiasm, and being exploration. Therefore, teachers must be prepared in order to focus their learners' mentally and also physical participation in scientific field trips (Lei, 2010).

#### *Teachers' experience, preparations, and training*

According to Tal and Morag (2009) and Michie (1998) in Behrendt and Franklin (2014), teachers have limited knowledge and little training related to the process of preparing and planning scientific field trips. Regardless of numerous field trips involvements, teachers commonly are not trained or taught the procedures or the pedagogy on how to successfully plan scientific field trips (Tal, 2004; Kisiel, 2006). For this reason, there is a need for the inclusion of experiential education, field trip preparations and field trip implementations in teachers' education programs. This is important for teachers to understand their roles and responsibility when planning scientific field trips (Tal & Morag, 2009).



Similar to Michie's (1998 in Behrendt & Franklin, 2014) study, Lohman (2000) also highlighted four inhibitors to informal learning environments namely; lack of time for learning, lack of proximity to learning resources, lack of meaningful rewards for learning and, limited decision-making power in school management. Lohman (2000) explored these barriers in the following:

#### *Lack of time for learning*

According to Lohman (2000), lack of time for learning is the most common barrier to informal learning. The teachers in Lohman's study reported that they need more time to develop their skills of planning scientific field trips, however, due to their busy schedules in the classroom, it is challenging to find that time.

#### *Lack of proximity to learning resources*

Lohman (2000) stated that lack of time suppressed engagement in informal learning to an even larger extent when "teachers lacked proximity to certain resources" (pp. 90). The proximity to four learning resources was described as being vital, namely; "other teachers' classrooms, department offices, computer technology, and libraries" (pp.91). The lack of proximity to the four learning resources prevents teachers from knowledge engagement (reflecting and sharing on others' understanding and skills), experimenting (enthusiastically trying out new ideas and procedures), and environmental scanning (scanning individualistically and gathering evidence from sources outside the classroom).

#### *Lack of meaningful rewards for learning*

Teachers reported that a lack of meaningful rewards for learning inhibited them from engaging in informal learning. Teachers felt that they do not get monetary rewards for taking their learners to informal learning environments. In addition, they seldom receive recognition for their participation in informal learning. Teachers felt that taking learners to informal learning environments is added responsibility from their day-to-day teaching. Therefore, they should get monetary rewards for using informal environments (Lohman, 2000).



### *Limited decision-making power in school management*

In addition to time, proximity, and rewards, limited decision-making power in school management was a more understated inhibitor to informal learning. Teachers reported being given limited inputs on the decisions concerning choosing informal learning environments in their schools. These decisions were mostly made by administrators and managers with little involvement from the teachers. This inhibited teachers to use informal learning environments for their learners' learning science (Lohman, 2000).

In summary, based on the literature reviewed, no work was found that detailed that teachers or schools are not taking their learners to informal learning environments due to the discussed barriers or negative effects. Additionally, literature instead demonstrates that schools, especially in primary, take their learners to informal learning environments every year (Behrendt & Franklin, 2014; Lohman, 2000). Therefore, this study sought to address how learners who are taken to informal learning environments perceive learning science.

### **2.2.6 Informal learning environment experiences**

For informal learning environment experiences to be successful, there are procedures that must be followed by teachers. Davidson et al., (2010) have identified and defined four implications of successful field trips. According to Davidson et al., (2010), the four implications of successful field trips are; 1) planning, 2) visiting the facility, 3) making the field trip fun, and 4) combining learner and teacher-led learning. Below are the descriptions of the four implications and also includes supporting literature.

#### *Planning*

Careful planning to informal learning environments leads to a successful and beneficial visit for learning science (Nabors, Edwards, & Murray, 2009). Additionally, to impact learners' learning significantly, it is imperative that teachers should integrate pre-visit, during-visit, and post-visit "classroom teaching into the field trips" (Kisiel, 2006). For their learners to gain the maximum amount of science knowledge from a field trip, science teachers must integrate field trip experiences with classroom tasks (Davidson et al., 2010).



Focused pre-visit preparations are important for a positive outcome on learners' learning and attitude towards science (Falk & Dierking, 2000). Moreover, teachers should always consider learners' excitement when going on a field trip during their preparations. Learners are always excited when they go on a field trip, and that may hinder learning. Therefore, teachers' preparations should focus on learners' experience in a field trip for learners' excitement not to inhibit learning in informal learning environments (Davidson et al., 2010). Unfortunately, in most instances, teachers do not plan for their learners' field trips, and consequently, learners' excitement hinders their learning (Kisiel, 2006).

According to Kisiel (2003), teachers fail to plan clear specific objectives for their learners' learning in informal learning environments. Additionally, teachers do not monitor their learners' learning during a visit, and that leaves learners with questions pertaining to how informal learning experiences relate to their classroom science learning (Kisiel, 2003). Learners do not necessarily link the science classroom learning with the informal learning environment experiences (Anderson, Piscitelli & Everett, 2008; Storcksdieck, 2001). Therefore, teachers need to be aware of their learners' perceptions of the field-trip experience and classroom learning so that they may design effective field trip experiences that will benefit learners' learning science.

#### *Visiting the facility*

For an informal learning experience to be successful for learners' learning science, teachers must visit the facility prior to their learners' visits. Teachers from the schools need to work thoroughly with the educators from the informal learning environments. School teachers and educators from the informal learning environments can collaborate to ensure that learners are prepared for a field-trip visit, related resources are prepared, and learners take part in an educational experience that is of high quality (Noel & Colopy, 2006).

#### *Making the field trip fun*

Davidson et al., (2010) explain that scientific field trips should be fun for learners. Learners must interact socially during field trip visits, and that should enhance learning activities. Although teachers might be concerned about maintaining learners' discipline





and keeping them under control during a field trip (Kisiel, 2010), and also believe that their learners are not capable of grouping themselves effectively (Davidson et al., 2010). When teachers allow learners to select their groups, this gives them the “feeling of control, may lessen the teachers’ workload and increase learners’ discussion” (Davidson et al., 2010: 139).

#### *Combining learner and teacher-led learning*

Additionally to self grouping and making the field trip fun, an effective field trip visit should combine both learner and teacher-led learning. A field trip should involve teachers explaining clear goals and the purpose of the trip, and learners are given a chance to explore and discover on their own. When learners are allowed to have control of their learning during the field trips, that encourages engagement and motivation (Davidson et al., 2010).

#### **2.2.7 Informal science learning in primary schools**

Literature reveals that science learning happens every day, meaning that learning science during early childhood occurs inside or outside of a home and a classroom (McPherson, 2014; Sackes, 2014; Siry, 2013). When learners in primary schools are exposed to learning in informal environments, they construct their learning of science and “science identities” based on their social backgrounds (Zimmerman & Bell, 2014; Walls, 2012). This implies that learners’ backgrounds control the extent to which they learn and appreciate science “through individual activities and/or group interactions” (McPherson, 2014: 97). Therefore, this current study was conducted in primary schools to explore the influence of learners’ perceive learning science in informal learning environments, particularly in the zoological gardens.

According to Zimmerman and Bell (2014) and Bamberger and Tal (2007), when learners in primary schools bring prior science knowledge, school curriculum understanding and personal experience to informal learning environments, the visits experience become more meaningful to learning science. McPherson (2014) stated that at an early age, it is important that learners develop an interest in science and that can be accomplished through an engagement in informal learning environments such as the zoological gardens.





Marsick and Watkins (2001) believe that, for an informal learning environment to be effective for learners' learning of science at an early age, it needs to be enhanced. Informal learning occurs without considerable external assistance or structure, but it still needs to be enhanced, especially with primary school learners to fully learn science (Marsick & Watkins, 2001). According to Marsick and Watkins (2001: 30), three conditions can be emphasised to enhance learning science in informal environments, namely; "critical reflection to surface tacit knowledge and beliefs, stimulation of proactivity on the part of the learner to actively identify options and to learn new skills to implement those options or solutions, and creativity to encourage a wider range of options".

Meanwhile, Bonawitz, Van Schijndel, Friel, and Schulz (2012) believe that learning in informal environments does not need to be enhanced since young children are naturally curious. Learners at a younger age, such as 6-14 years continuously seek to explore the world around them, they want to solve problems, do hypothesis testing and they are naturally active (Bonawitz et al., 2012; Gopnik, 2012). It is therefore essential to take learners to informal learning environments to learn science as they are explorers. Bijvoet-van de Berg and Hoicka (2014) elaborate that, children at a young age as two years old, if they were to be given or shown an unfamiliar item, they would explore that item and further take on different actions.

Additionally, some studies have revealed that enhancing science learning in informal environments by using demonstrations or instructions often limit children' explorative behaviour (Wood, Kendal & Flynn, 2013; Butler & Markman, 2012; Bonawitz, Patrick, Hyowon, Noah, Spelke & Schulz, 2011). Bonawits et al., (2011) added that when younger children visit a science center, and they are not presented with instructions, that results in them exploring an environment for longer and additional discover more about the environment functions as compared to children who received instructions. Wood et al., (2013) added that when younger children are exposed to instructions, that also decreases their exploration of coming with alternative explanations to a problem and instead follow given instructions.



## 2.3 The Zoological Gardens

### 2.3.1 National Zoological Gardens in Pretoria South Africa and its history

Dr. J.W.B Gunning who was the Director of the State Museum in Pretoria, on October 21, 1899, “moved a collection of animals from the museum’s premises to the farm named Rus-in-Urbe” at Pretoria, South Africa (Leggon & Gaines, 2017: 96). This is when the National Zoological Gardens in Pretoria, South Africa began (also known as Pretoria zoo or NZG) (Oberholzer, 1992). Some animals were donated to the State Museum with the aim of being mounted in the museum yard. However, Dr Gunning kept them and did not have a desire to kill them (Leggon & Gaines, 2017).

The initial collection of animals moved by Dr. Gunning comprised of the following animals; a leopard, a striped polecat, vervet monkeys, a jackal, various antelope species, a genet, baboons, a bat, dormice, 50 birds, a spotted eagle-owl, a tortoise, a monitor lizard and a python (Oberholzer, 1992). In 1910, fish were added to the animals’ collection when the municipal council of Pretoria donated the “Sammy Marks fountain and fish pond” (Leggon & Gaines, 2017: 97). In 1913, Pretoria zoo became self-regulating from the State Museum. As Pretoria zoo was now self-regulating, its main role was being an in-between home for “animals destined for Europe and the USA” (Leggon & Gaines, 2017: 97). In 1916, that is when Pretoria zoo was given a “national status” and since known as the National Zoological Gardens of South Africa (Labuschagne & Walker, 2001).

In this current study, the National Zoological Gardens in Pretoria, South Africa was chosen as a research site. According to NZG (2021) and Leggon and Gaines (2017), the National Zoological Gardens in Pretoria, South Africa is the largest and the only zoological gardens with a national status in the country. With regards to schools visiting the zoological gardens, approximately 140,000 learners, mostly from disadvantaged communities, participate in the National Zoological Gardens educational programs yearly (Leggon & Gaines, 2017).

The National Zoological Gardens in Pretoria also contributes to various off-site science festivals. These festivals mostly attract a high number of learners from high schools (NZG, 2021). Additionally, Pretoria zoo also formed a science club known as a ZooClub that yearly has about 80-100 members that frequently participate in science



activities initiated by the Pretoria zoo staff (Leggon & Gaines, 2017). Pretoria zoo initiated the ZooClub to promote “programs for science careers” and further involve learners generally from disadvantaged communities (Leggon & Gaines, 2017). The program aims to encourage learners to consider careers in science and support learners’ growth through the management of biodiversity (NZG, 2021).

### **2.3.2 Zoological gardens as an informal learning environment**

Similar to other informal learning settings such as museums and aquariums, zoological gardens are defined as educational institutions, and they frequently emphasize conservation issues. Learning in an informal learning environment such as zoological gardens is different from a school setting where aims and concepts are explained in detail (Randler, Kummer, & Wilhelm, 2012).

Zoological gardens have mainly changed from entertainment institutions to organisations that prioritize science education. However, this process is still ongoing since most zoological gardens have not fully achieved this (Collins, McKeown, McSweeney, Flannery, Kennedy, O’Riordan, 2021; Godinez & Fernandez, 2019; Mellish, Ryan, Pearson & Tuckey, 2019). Subsequently, zoological gardens educational goals have changed from short-term factual information to encourage knowledge that is long-term (Mellish et al., 2019). However, other studies have reported the challenges to establish the impact of visiting zoological gardens on learners’ learning (Godinez & Fernandez, 2019; Moss & Esson, 2013). Hence this study also investigated the influence of a visit to the zoological gardens on learners’ learning science.

Zoological gardens offer science education experiences, actually, “science is a discipline that is conducive to free-choice learning or learning outside the classroom” (Collins et al., 2021:18). According to Braund and Reiss (2004), most learners perceive learning in informal environments as an exciting and unforgettable way to learn depending on teachers’ preparations. Learners may not be given much “free-choice” pertaining to learning outside the classroom (Braund & Reiss, 2004). Several researchers accept that learners participate in informal learning environments such as zoological gardens for educational reasons, curiosity and entertainment (Collins et al., 2021; Braund & Reiss, 2004; Falk, 2005), but the inspiration to learn science in



informal environments is personal and differs considerably (Phipps, 2010; Falk & Dierking, 2002).

When learners visit zoological gardens, they “build” science knowledge based on the physical, personal, and social background of a visit (Phipps, 2010; Falk & Dierking, 2001). Therefore, learning science in informal environments such as zoological gardens is a “highly personal and cumulative process based on multiple prior experiences which together contribute to the construction of knowledge” (Collins et al., 2021:18; Falk, 2005). This makes assessing learning that takes place in informal environments challenging. For this current study, learners’ learning in the zoological gardens was not assessed, but the study investigated the influence of the zoological gardens on learners’ learning science.

As stated above, learners participate in zoological gardens for entertainment purposes (Collins et al., 2021; Braund & Reiss, 2004; Falk, 2005). Practically, all learners expect a visit to zoological gardens to be fun (Luebke & Matiasek, 2013). However, limited studies have investigated learners’ expectations that meet an experience for fun during zoological garden’s visit. Hence this study investigated learners’ perceptions of learning at the zoological gardens. According to Packer (2006), during a scientific field trip, learners experience fun and that leads to learning even though they may not intend to learn. When learners experience fun at zoological gardens, this includes a mixture of “discovery, exploration, mental stimulation, and excitement” (Luebke & Matiasek, 2013: 408).

## **2.4 Science curriculum**

### **2.4.1 Science curriculum in South Africa**

The National South African Curriculum has endured several revisions in the earlier decade. With numerous revisions in the South African curriculum, the science curriculum has highlighted the significant educational goal of learners’ engagement in scientific inquiry (Erduran & Msimanga, 2014). The current revised science curriculum promotes an inquiry-based approach to learning that “encourage learners to explore objects, situations and events in their immediate environment, to collect data, record information and draw conclusions accurately” (Department of Basic Education, 2002: 34).



The current science curriculum states that Natural Sciences and Technology is a subject that seeks to “promote and develop scientific and technological literacy” (Department of Basic Education, 2011:9). Furthermore, Natural Sciences and Technology is a subject that “promote knowledge and skills in scientific inquiry and problem solving, the construction and application of scientific and technological knowledge, and understanding of the nature of science and its relationship” (Department of Basic Education, 2011:8).

The purpose of the science curriculum is to produce learners who are able to do the following (Department of Basic Education, 2011:5):

- *“Identify and solve problems and make decisions using critical and creative thinking;*
- *Work effectively as individuals and with others as members of a team;*
- *Organise and manage themselves and their activities responsibly and effectively;*
- *Collect, analyse, organise and critically evaluate information;*
- *Communicate effectively using visual, symbolic and/or language skills in various modes;*
- *Use science and technology effectively and critically show responsibility towards the environment and the health of others;*
- *Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation”.*

The development in the South African science curriculum reflects the worldwide trends in science education. For example, in the United Kingdom, much priority in the science curriculum has been apportioned to inquiry (Erduran & Msimanga, 2014). In addition, in the United States, inquiry-based science curricula have been recognised by the American Association for the Advancement of Science (AAAS) and the National Research Council (NRC) (Erduran & Msimanga, 2014).

#### **2.4.2 Science Curriculum and informal learning environments**

In the national growth across all social divisions, South Africa has increased the emphasis on science and technology (Department of Science and Technology, 2014). The Department of Science and Technology (DST) in South Africa has collaborated with a varied network of organisations to deliver science engagement programs (Leggon & Gaines, 2017). This network includes organisations such as museums,



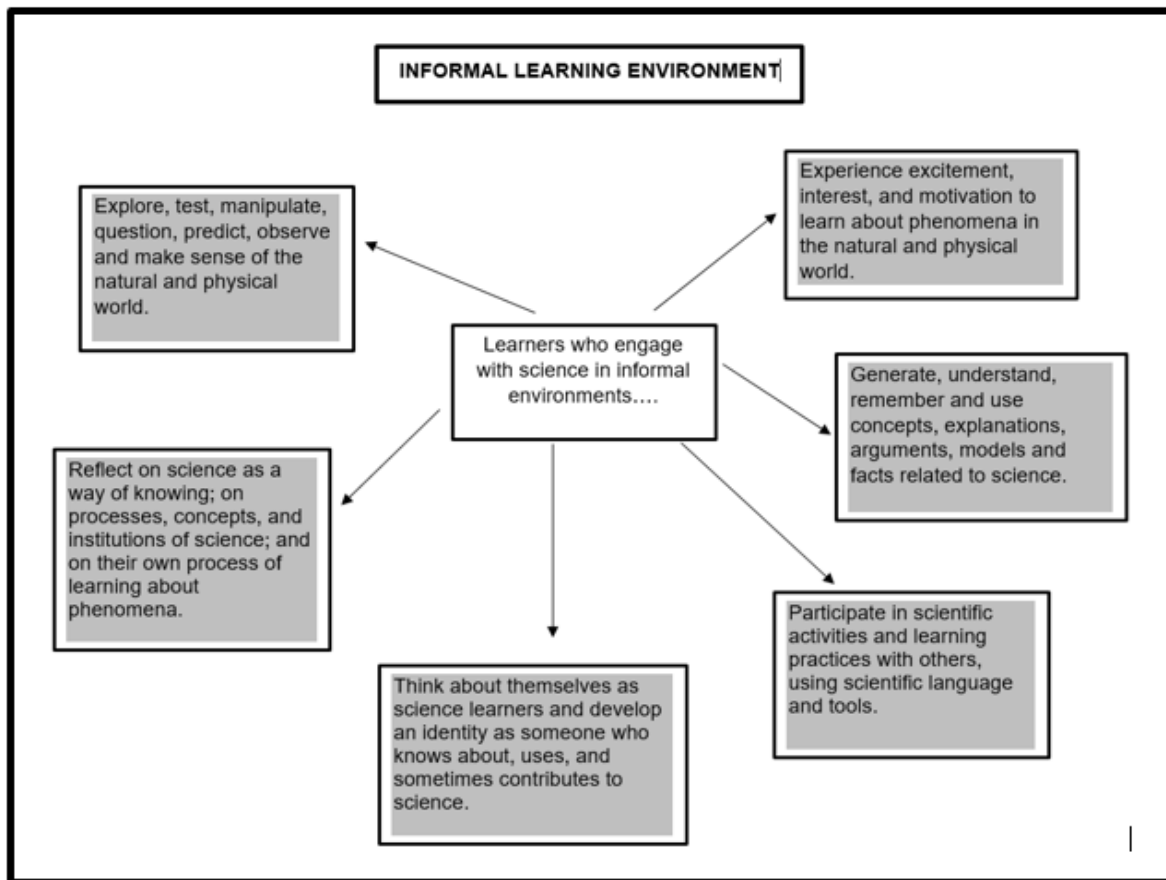
science centers, educational organisations, as well as the National Zoological Gardens of South Africa (Department of Science and Technology, 2014).

The National Zoological Gardens of South Africa has three strategic plans with regards to science engagement, namely; science awareness, science education, and science communication (Leggon & Gaines, 2017). Essentially, zoological gardens characterise an engagement among “live animals, biological science and the public of all ages” as one of the primary points (Leggon & Gaines, 2017).

According to Randler, Baumgartner, Eisele, and Kienzle (2007) and Lukas and Ross (2005), science lessons presented at the zoological gardens are different from science lessons presented in a formal environment. Lessons that are presented at the zoological gardens have the potential to motivate and inspire science interest in learners more compared to lessons in the formal environments (Randler et al., 2007; Lukas & Ross, 2005). In addition, when learners view live animals, that have a powerful influence on building a new understanding of a natural world, wildlife, and the role of humans intervention in the natural world (Jensen, 2011). Furthermore, various studies have found that learners’ cognitive and affective reactions have been impacted by viewing animals including their behaviour, appearance, and characteristics (Luebke & Matiasek, 2013). It has also been established that when learners view animals, engage in interactive activities, and engage with each other can positively impact their knowledge of science and attitude about animals (Luebke & Matiasek, 2013; Meluch & Routman, 2004; Povey & Rios, 2002).

Literature shows that informal learning environments can be integrated with science curriculums (Bell, Lewenstein, Shouse & Feder, 2009; National Research Council, 2009; Jolly, Campbell & Perlman, 2004), and they can further achieve the components outlined in science curriculums worldwide (Bell et al., 2009). For instance, one of the general components of a science curriculum is to produce learners that develop an interest in science (National Research Council, 2009). Figure 2.1 below shows the characteristics of informal learning environments that enable learners to develop an interest in science, a general component of science curriculums (Bell et al., 2009; National Research Council, 2009).





**Figure 2.1:** Informal learning environments characteristics that influence learners to develop an interest in science (Model adapted from Bell et al., 2009: 43)

## 2.5 Conceptual framework

Learning outside the classroom is described as a learning experience that occurs outside a formal classroom and involves “a whole-body, whole-brain, and whole-experience activity” (Falk & Dierking, 2002: 10). Falk and Dierking (2002) explain that learning outside the classroom has the potential to improve learners’ technological knowledge and also encourage coming up with solutions to problems of the real world.

According to Larsen, Walsh, Almond and, Myers (2017), a learning and teaching experience that occurs outside a classroom is beneficial for both teacher and a learner. This learning experience can enhance a learner’s personal and social development (Larsen et al., 2017). In addition, learners that participate in learning science outside a classroom have been reported to have increased motivation, remember knowledge



learned vividly, and further improve their performance of science in a classroom (Larsen et al., 2017; Ryan & Deci, 2017; Behrendt & Franklin, 2014).

Larsen et al., (2017) and Behrendt and Franklin (2014) state that there are planned educational outcomes for learning outside the classroom. The following five areas are some of the intended learning outcomes of learning outside the classroom (Larsen et al., 2017; Behrendt & Franklin, 2014):

- To develop learners' social and personal skills.
- To develop learners' observation and perception skills.
- To add value, relevance and meaning to learning.
- To provide learners with "first-hand real-world experience".

Moreover, Wan Sulaiman, Mahbob, and, Azlan (2011) study also supports that there are intended learning objectives when learners are learning science outside a classroom. These researchers explain that learning science outside the classroom is mainly learner-centred and it strengthens the science curriculum learned in a formal classroom. There are eight domains that should be planned to be achieved when learners learn science outside a classroom, namely (Wan Sulaiman et al., 2011);

- Learners' understanding of the science concepts taught in a classroom is reinforced.
- Learners are provided with a learning experience in a real situation.
- Learners are provided with a learning experience that is pleasant and meaningful.
- Through contextualised experiences, learners are allowed to think and master knowledge learned.
- Learners' curiosity and attitudes to learning science is increased.
- Learners' social skills and ability to work in a team is expanded.
- Learners' skills such as processing, analysing, and data collection are developed.
- Learners' wholesome ethics to be encouraged.

The conceptual framework of this study was based on Learning Outside the Classroom (LOtC) developed by Malone (2008). This model has been adapted to suit



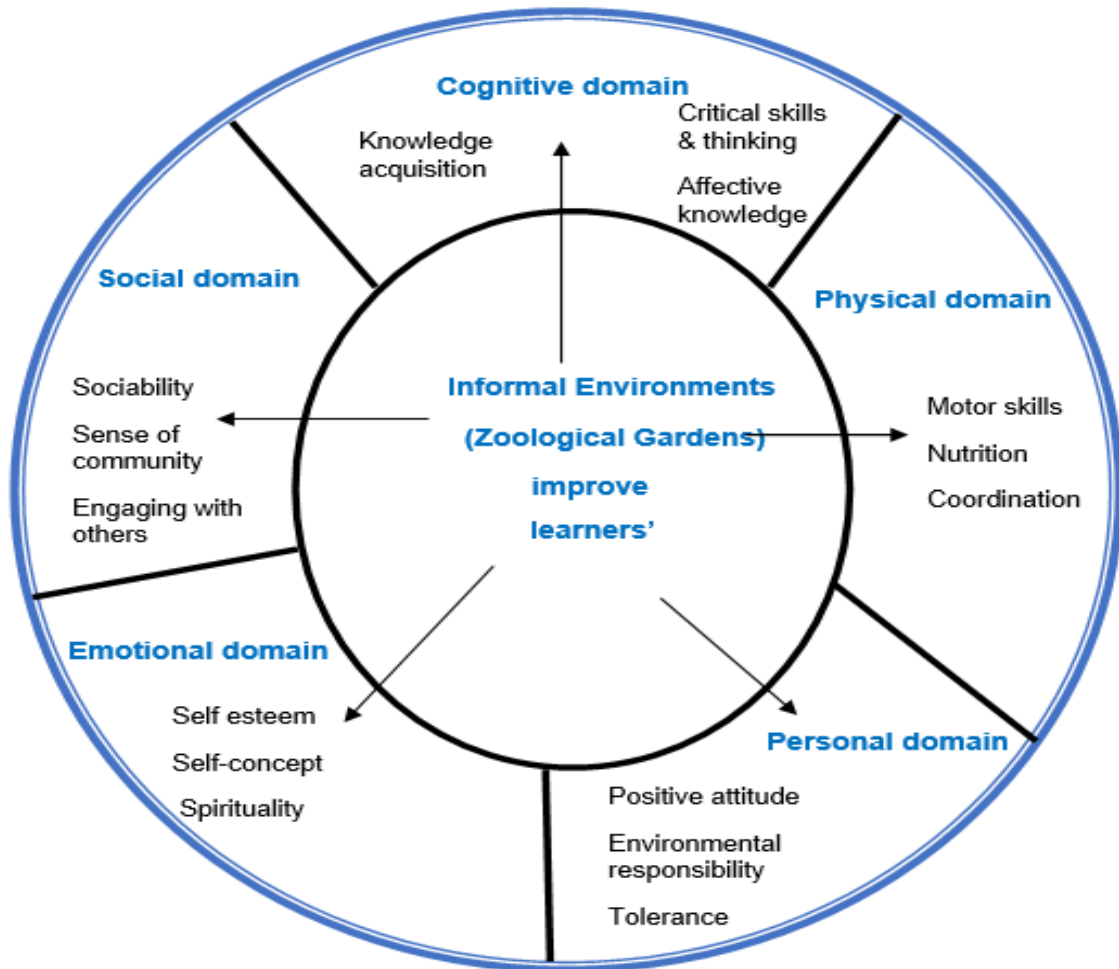


this study. The LOtC framework was designed for non-formal learning. In this current study, this framework was adapted for informal learning in zoological gardens.

According to Malone (2008), Learning Outside the Classroom is explained as opportunities provided to learners and initiated by their teachers. Learning Outside the Classroom allow learners to participate in alternative activities that “supplement and complement the formal indoors classroom curricula” (Malone, 2008: 7). In most circumstances, a type of learning connected with learning outside the classroom is informal learning (Falk & Dierking, 2002). Most teachers initiate learning in informal environments such as a museum, zoological gardens or science centers (Falk, 2008).

The LOtC model describes the five domains that have an impact on learners’ learning in informal environments. These domains include emotional domain, personal domain, cognitive domain, physical domain and social domain (Malone, 2008). Figure 2.2 below shows the LOtC model that was adapted in this current study. This model consists of factors of each domain that defines it, this was adapted from the original model. This model was used as a basis on which to develop an evidence-based framework.

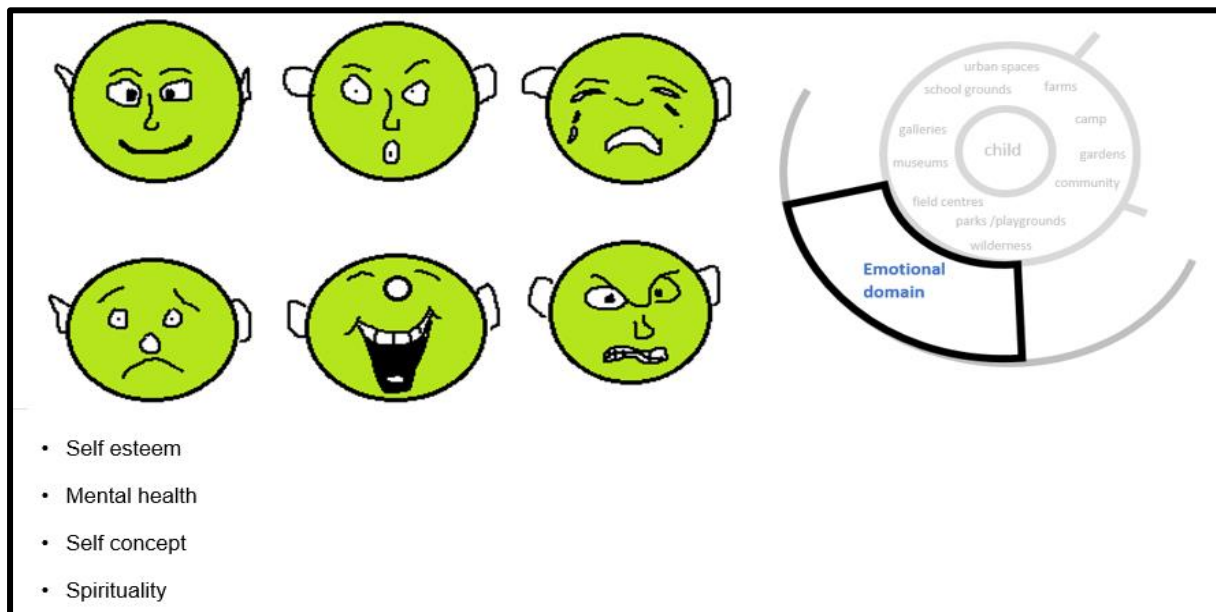
## Learning Outside the Classroom (LOtC)



**Figure 2.2:** Learning Outside the Classroom (LOtC) model (adapted from Malone, 2008)

Malone (2008) explains that the five domains describe the whole development when learning science outside the classroom. These domains are adapted to suit the purpose of this current study. The domains explain that learning outside the classroom has an influence on learners' emotional well-being, learners' responses, learners' learning, learners' physical experiences and learners' social interaction (Malone, 2008). The five domains of the LOtC model are explained in detail below.

### Emotional domain (childrens' emotional well-being)

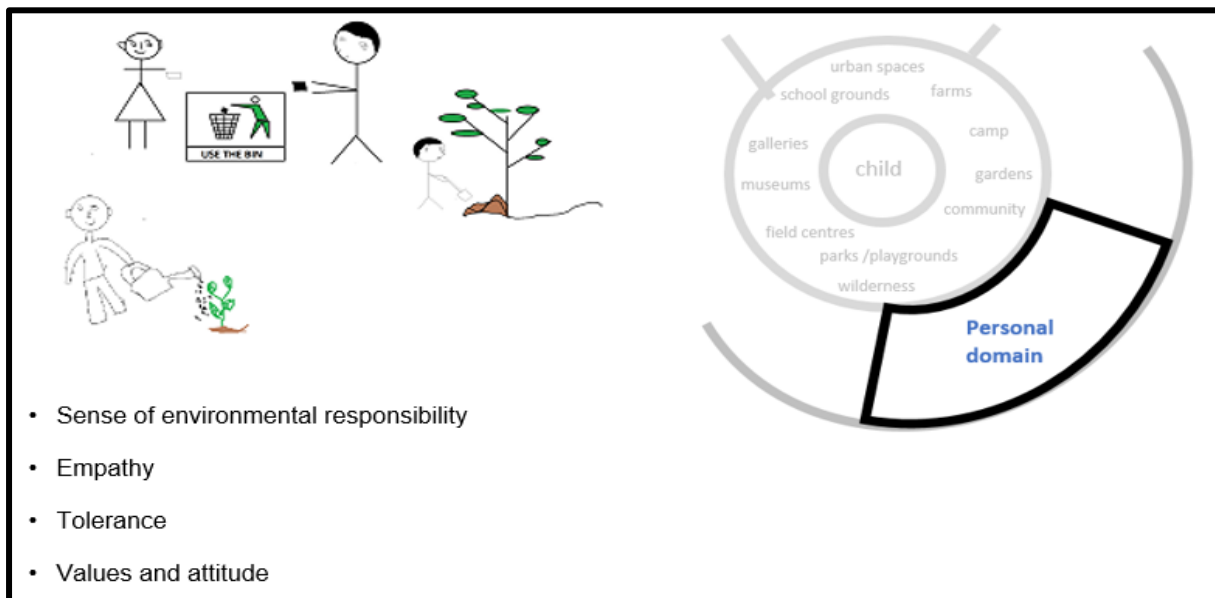


**Figure 2.3:** Learning Outside the Classroom (LOtC), emotional domain (Malone, 2008)

According to Malone (2008), the emotional benefit of learners' learning science is often ignored in a formal classroom. Teachers often focus more on the cognitive and personal development of learners (Malone, 2008). Literature shows that the emotional development of a learner is often supported when learning takes place in informal environments (Henderson & Atencio, 2007; MacRae, 2007; Maller, 2007).

The emotional domain focuses on learners 'relationship with nature' (Malone, 2008). Studies show that when learners are "hands-on contact with nature", that increases their interest and concentration in science (Malone, 2008: 20). The emotional benefits when learners learn science in informal environments are; "improved mental health, enhanced self-concepts, spirituality, and improved learner self-esteem" (Malone, 2008: 20).

### Personal domain (childrens' responses)



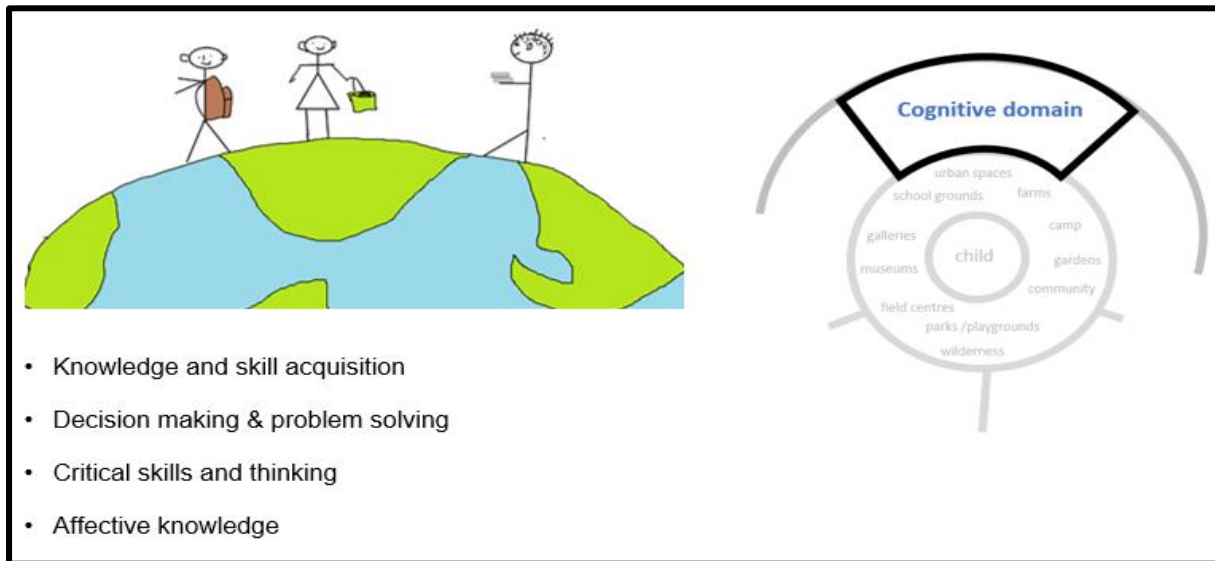
**Figure 2.4:** Learning Outside the Classroom (LOtC), personal domain (Malone, 2008)

This domain is concerned with the change of behaviour and positive attitudes of learners towards science after an experience of the informal environment (Malone, 2008). In addition, there is personal development in learners when there is a “heightened sense of environmental responsibility, positive values, enhanced feelings of tolerance, nurturing, resilience and empathy” (Malone, 2008:22).

Research shows that a visit to the informal environment can enhance learner’s positive perspectives and environmental accountability in the long term towards science (Malone, 2008; Maller, 2007). Research further shows that informal environments experience allow learners to develop a “genuine appreciation and love of nature” (Malone, 2008: 23; MacRae, 2007; Maller, 2007).

In their studies, Chawla and Cushing (2007) and Chawla (1999) have provided substantial evidence that after a visit to an informal learning environment, there is a long term change in learners’ behaviour. Learners’ environmental interest and concern are increased, and they have more tolerance towards one another (Chawla & Cushing, 2007; Chawla, 1999).

## Cognitive domain (childrens' learning)



**Figure 2.5:** Learning Outside the Classroom (LOtC), cognitive domain (Malone, 2008)

Malone (2008:14) explains that evidence in this domain is described by “knowledge and skills acquisition, enhanced environmental and geographical literacy, improved critical skills and thinking, better decision making and problem-solving abilities and affective”. Literature shows that cognitive benefits are mostly supported mainly by museums, zoological gardens, school grounds and science centers (Malone, 2008; Ernst & Monroe, 2006; Kruse & Card, 2004). Research by Ernst and Monroe (2006) provided evidence that a visit to an informal learning environment contributed to learners acquiring critical and thinking skills. Learners’ thinking skills were tested during a visit to a museum, and findings showed that learners who visited the museum had increased critical thinking skills compared to learners who did not visit the museum (Ernst and Monroe, 2006).

From Ernst and Monroe (2006) and Kruse and Card (2004) studies, findings showed that learners’ conservation knowledge was increased during the research period. Furthermore, Dillon, Rickinson, Teamey, Morris, Choi, Sanders and Benefield (2006:39) study also supported the findings and stated that a visit to an informal

learning environment can “aid long-term memory in science knowledge, bring about affective benefits and reinforce academic learning”.

### Physical domain (childrens’ physical experience)

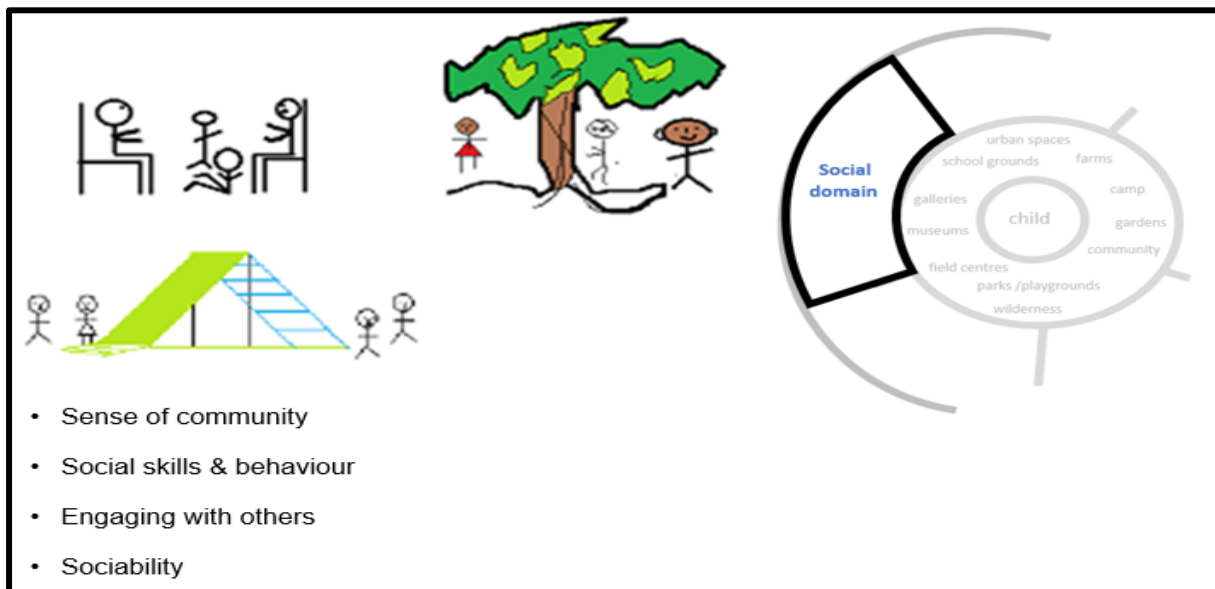


**Figure 2.6:** Learning Outside the Classroom (LOtC), physical domain (Malone, 2008)

Literature shows that there is limited evidence showing the impact of learning outside the classroom on the learners’ physical domain (Malone, 2008; Fjortoft & Sageie, 2000). However, this domain still benefits learners when they visit informal learning environments. In Thompson, Travlou, and Roe (2006) study, they found that after learners visited an informal learning environment, they “increased their physical fitness and positive attitudes to outdoor activities and that makes an important contribution to tackling obesity and supporting healthy lifestyles in young people”.

According to Malone (2008: 16), evidence in a physical domain is shown when there is an increase in learners “physical fitness, motor skills development, coordination, sensory and tactile experience, nutrition and the health of the body”.

## Social domain (childrens' social interaction)



**Figure 2.7:** Learning Outside the Classroom (LOtC), social domain (Malone, 2008)

The benefits of this domain focus on how learners interact in informal learning environments and the significance of this experience (Malone, 2008). This social domain is mainly embraced in museums, zoological gardens, and school grounds (Malone, 2008). The descriptors employed in studies for this social domain includes, “social skills and behaviour, sense of community, engaging with others, sociability and connectedness between learner’s inner and outer worlds” (Malone, 2008: 18). A study by Malone and Tranter (2003: 164) found that learners visits to informal environments “identified sociability through verbal interaction as a key benefit”.

### The application of the LOtC framework in this study

In this study, the LOtC framework was used to inform the analysis of the data. Additionally, the framework was used as a basis on which to develop an evidence-based framework developed in chapter 6.

By exploring the influence of learners’ perceptions of learning science in the zoological gardens, the framework was able to inform,

- How learners perceive learning science in the zoological gardens.





- How the visit to the zoological gardens influence learners' learning science.
- How the visit to the zoological gardens influence learners' attitudes towards learning science.

## 2.6 Conclusion

This chapter presented the literature review concerning informal learning environments. The discussion of the literature was aimed at understanding the importance and the influence of informal learning environments on learners' learning science. The reviewed literature indicated the findings relating to the implementation of learning outside the classroom to improve learners' learning science. However, there is little literature available in South Africa that shows the impact of learning outside the classroom on learners' learning science. Since this study was conducted in primary schools, the influence of learning outside the classroom on young children was also reviewed. The literature showed that it is important for learners at an early age to develop an interest in science because that motivates them to pursue science careers in their adulthood. It was highlighted that learning in informal environments encourages learners to be interested in science. In the next chapter, I discuss the details of the research design and methodology for this study.





## CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

*Failure is success... If we learn from it*

*-Malcolm Forbes*

### 3.1 Introduction

This chapter outlines the research design used to study the influence of learners' perceptions of learning science in an informal learning environment such as the National Zoological Gardens. This chapter discusses the research design and methodology. In addition, it provides a detailed explanation of and reasoning behind various data collection methods, the research strategy used in selecting participants and the research site for the study. This chapter concludes with a discussion of the validity and the ethical considerations of this research study. Table 3.1 below outlines the research design employed in this study:

**Table 3.1: Summary of the research design**

Research questions	<p>1. What factors influence learners' perceptions of learning science in an informal learning environment such as the National Zoological Gardens?</p> <p>a. How do learners perceive learning science in the National Zoological Gardens?</p> <p>b. How does the visit to the National Zoological Gardens influence learners' learning science?</p> <p>c. How does the visit to the National Zoological Gardens influence learners' attitudes towards learning science?</p>
Epistemological paradigm	Interpretivism
Methodological paradigm	Qualitative
Research design	Phenomenographic
Selection of participants	<p>Convenience sampling</p> <p><b>Criteria</b></p> <ul style="list-style-type: none"> <li>• Accessible population visiting the National Zoological Gardens</li> <li>• Teachers visiting the National Zoological Gardens and teaching science subjects</li> <li>• Learners visiting the National Zoological Gardens from primary schools</li> </ul>
Data collection	<ul style="list-style-type: none"> <li>• Semi-structured interviews</li> <li>• Observations</li> </ul>



	<ul style="list-style-type: none"><li>• Drawings</li></ul>
Ethical considerations	<ul style="list-style-type: none"><li>• Ethical consideration</li><li>• Informed consent</li><li>• Confidentiality</li><li>• Anonymity</li><li>• Participants protected from harm</li></ul>
Strategies of enhancing trustworthiness	<ul style="list-style-type: none"><li>• Research questions verified by the supervisor if suitable</li><li>• Credibility: triangulation and participants validation</li><li>• Dependability: audio recordings, transcriptions, and field notes</li></ul>

### 3.2 Epistemological paradigm

#### 3.2.1 Interpretivism

This study used an interpretive viewpoint as a paradigm that guided this study. The interpretive paradigm is not concerned with seeking to reveal the ultimate truth, it seeks to get an in-depth understanding of participants' interpretations of reality (Bunniss & Kelly, 2010). For this current study, the researcher sought to get a detailed understanding of how participants interpreted their reality of learning at the zoological gardens.

Subsequently, the research questions posed by the researcher in chapter 1 are important in determining the choice of the research paradigm. The current study was not designed to recommend the knowledge that learners should possess when learning science in an informal learning environment, but rather to explore the influence of their perceptions of learning science in the zoological gardens. Therefore, the theoretical foundation of this current study was appropriately located in the interpretive domain. This means that the researcher embraces the "subjective ontological understanding" that learners' understanding is informally constructed (Creswell, 2013; Mack, 2010; Nieuwenhuis, 2007). Hence, my responsibility as a researcher was to observe learners during the zoological gardens' visits, and to listen to the understanding they had constructed about learning science in informal learning environments.

The interpretivist paradigm was selected based on the belief that learners can interpret their experiences and further give meaning to them (Mertens, 2014; Nieuwenhuis,



2007). As a researcher, I understood that this meant that interpretivists focus on participants constructed multiple realities (Mack, 2010; Nieuwenhuis, 2007). As 35 learners were participants in this study, I believed that the interpretivist paradigm was suitable to be used in order to reveal the multiple experiences of each learner in her/his background. Moreover, Nieuwenhuis (2007) confirms that in a research study, the realities of participants depend on their spoken words, suggestions and meaning. Therefore, in this study, I allowed participants' views and opinions to be heard through interviews. I did not follow an approach of carrying a list of information and knowledge from the literature that learners ought to have but allowed the participants to give their meaning through interviews, drawings and observations.

### **3.3 Research design and methodology**

#### **3.3.1 Qualitative approach**

A qualitative research approach was used to guide this study. This research approach is often used when a researcher is concerned about the participants' views and experiences in their natural settings (Stenfors-Hayes et al., 2013). From this understanding, it means that qualitative research seeks to answer the "what, why, and how" questions (Charmaz, 2006). In a qualitative study, researchers are concerned about exploring social phenomena and a meaning derived from the participants that interact with such phenomena (Creswell, 2013; Denzin & Lincoln, 2011). As a qualitative researcher, the main aim is to seek to gain an understanding of participants' experiences through the activities they undertake (Creswell, 2013; Leedy & Ormrod, 2005). Therefore, qualitative studies are background-bound (Denzin & Lincoln, 2011).

I believe that learners visiting the zoological gardens will provide the context in how they perceive learning science in informal environments. I recognise that "human actions" are best understood from the background they initiate from (Henning, Rensburg & Smit, 2011). I regarded the participants' movements and activities in the zoological gardens as a significant story that had their experiences on how they perceive learning science in informal environments.

The study aimed to provide rich and in-depth descriptions of how learners perceive learning science in informal learning environments. I was concerned about enhancing my understanding of the factors that influence the perceptions of learners' learning



science in the scientific field trips. Consistent with the qualitative practice, I focused on determining the meanings that the participants make when they visit informal learning environments (Creswell, 2013). My commitment in a qualitative position is capturing the participants' viewpoints through analysing, listening and observing how they make meaning of a phenomenon studied (Creswell, 2013).

In qualitative research, the knowledge that is generated is originated from the participants in their natural backgrounds (Johnson & Christensen, 2012; McMillan & Schumacher, 2010). A qualitative research approach was considered suitable for this study as I studied the participants in their natural backgrounds. Furthermore, the use of a qualitative approach in this study assisted the researcher to immerse herself in the data and understand it from the participants' perceptions. In addition, this approach was used to allow the researcher to be flexible with the research questions as the researcher becomes immersed in the participants' ethos and understands how they do their activities and why (Creswell, 2014).

### **3.3.1.1 Strength and limitations of qualitative approach**

As an interpretivist researcher that utilised a qualitative approach, this has provided my participants with the ability to have a voice to share their experiences pertaining to learning science in informal learning environments particularly the zoological gardens (Mertens, 2014; Creswell, 2013).

According to Creswell (2013), a qualitative research approach has essential limitations, however, this does not withstand the strength mentioned previously. Qualitative research studies are intended for a smaller sample because their emphasis is on understanding the "context-rich" data (Creswell, 2014; Johnson & Christensen, 2012; Henning et al., 2011). Due to this, qualitative research studies are criticised for their incapability to extend the findings to a wider population (Tashakkori & Teddlie, 1998). I believe that this study as a qualitative phenomenographic research study is imperative in informing further methodological orientations as part of forthcoming studies in learning science in informal learning environments.

In a qualitative research method, a researcher is the main research instrument and it is frequently stated that "personal bias is intrinsic to its nature" (Denzin & Lincoln, 2011; Miles & Huberman, 1994). Therefore, I have addressed this limitation in this current



study by using field notes from the observations in the zoological gardens in an effort to recognise any areas of bias. Furthermore, I have used multiple data collection methods to limit bias (Creswell, 2013).

### **3.3.2 Phenomenographic research design**

The research design that was used to guide this study is a phenomenographic research design. A phenomenographic research design was developed “from an empirical educational framework by Forence Marton and a co-worker in the 1970’s” (Larsson & Holmstrom, 2007; 56). Phenomenography is the “empirical study of the different ways in which people think of the world” (Ornek, 2008:2). In this regard, the way in which learners think learning takes place in the informal learning environment. In other words, a phenomenographic research study aims to discover different ways in which a group of people understand, experience, realise and conceptualise several features of phenomena in their natural world (Marton, 1981). A researcher in a phenomenographic study chooses to investigate how people understand a specific phenomenon and not “to study a specific phenomenon” (Ornek, 2008:2).

A phenomenographic research design explores participants’ experiences, interpretations and understanding of an occurrence (Ornek, 2008). An investigation in a phenomenographic research design is not “directed at the phenomenon as such but at the variation in peoples’ ways of understanding the phenomenon” (Larsson & Holmstrom, 2007: 56). According to Ornek (2008:3), there are several ways in which participants in a study understand and experience a given phenomenon, since different participants “experience a phenomenon in different ways”. As a phenomenographer, I seek to find numerous conceptions that participants in this current study have for a specific phenomenon. A conception of phenomenographic researchers pertaining to a given phenomenon is not about the emphasis of the study, as the emphasis of a phenomenographical study is about a conception that participants have on a certain phenomenon (Ornek, 2008; Larsson & Holmstrom, 2007; Marton, 1981).

Using this research design was suitable because this study sought to investigate learners’ various perceptions and influences of learning science in an informal learning environment. Furthermore, using this research design was suitable since studies have



shown that a phenomenographic research design “has been used to explore approaches to learning”, and this current study sought to explore the approach of learning science in an informal learning environment (Stenfors-Hayes, Hult & Dahlgren, 2013).

Research shows that we can get evidence about peoples’ perception through their “speech and actions” (Larsson & Holmstrom, 2007). The phenomenographic preferred data collection is where participants can freely express their experiences and give concrete examples to “avoid superficial descriptions about their experience” (Larsson & Holmstrom, 2007:56). Hence, the data of this study was collected through interviews, observations and drawings. The purpose of data collection in a phenomenographic study is to look at the ideas of participants from their perspectives (Walker, 1998). As a researcher in a phenomenographic research study, you try to be neutral and unbiased to the ideas of the participants during data collection. This is because a phenomenographic study is “empirical research”, as a researcher, I am not reviewing my own awareness and reflection, but the “awareness and reflection of the participants” (Sjostrom & Dahlgren, 2002). This is referred as “bracketing” (Ornek, 2008; Sjostrom & Dahlgren, 2002). According to Ornek (2008), bracketing is when a researcher in a phenomenographic study approach the data collected open-mindedly without enforcing his or her perspectives in the data.

For instance, in a phenomenographic research study, interviews can be designed according to the participants’ conversations and their responses to the prearranged questions (Ornek, 2008). If a participant wants to elaborate his/her understanding of the phenomena, a researcher should allow him/her to do so. When the participants’ explanations are vague, a researcher in a phenomenographic study should ask probing questions such as, “could you explain that further?” (Barnard, McCosker & Gerber, 1999). A phenomenographic researcher should make it clear to the participants of a study that the interviews are open, they can think noticeably and they are allowed to pause when they are uncertain (Barnard et al., 1999). The answers from the interviews cannot be assessed as being correct or incorrect. However, the researcher should show interest when the participants are expressing themselves during the interviews (Sjostrom & Dahlgren, 2002).



Research has also shown that phenomenography can sometimes be confused with phenomenology (Ornek, 2008; Sjostrom & Dahlgren, 2002; Barnard et al., 1999). Similar to phenomenography, phenomenology is a research design that is developed by taking experience as the focus of a study (Walker, 1998). Between phenomenography and phenomenology, there are several similarities, however, they also have differences (Marton, 1981). Table 3.2 below shows the differences between phenomenography and phenomenology (Larsson, Bremer, Arestedt, Gunnarsson, Stromberg & Hjelm, 2021; Barnard et al., 1999 in Ornek, 2008:11):

**Table 3.2: The differences between phenomenography and phenomenology (Barnard et al., 1999 in Ornek, 2008:11)**

Phenomenography	Phenomenology
"The structure and meaning of a phenomenon as experienced can be found in pre-reflective and conceptual thought.	A division is claimed between pre-reflective experience and conceptual thought.
The aim is to describe variation in understanding from a perspective that views ways of experiencing phenomena as closed but not finite.	The aim is to clarify experiential foundations in the form of a singular essence.
An emphasis on collective meaning.	An emphasis on individual experience.
A second-order perspective in which experience remains at the descriptive level of participants' understanding and research is presented in a distinctive, empirical manner.	A first-order perspective.
The analysis leads to the identification of conceptions and outcome space.	The analysis leads to the identification of meaning units".

### 3.3.2.1 Strengths and limitations of phenomenographical studies

The strength of selecting a phenomenographic research design was that "learners may become aware of contradictions in their reasoning and become more open to alternative ideas as they reflect on their views and understanding of their world experience" (Ornek, 2008; 13). As a result of a phenomenographic study similar to this current study, teachers may benefit from learners' explanations of their perceptions of





learning science in informal learning environments to improve or develop their science teaching strategies.

Regardless of this research design advantages, phenomenographic studies are criticised to have a limited number of ways in which a phenomenon can be understood and perceived (Larsson et al., 2021; Marton & Booth, 1997), and also that participants of about 20 are typically enough in a phenomenographic study to recognise these several ways of understanding (Holmstrom, Halford & Rosenqvist, 2003). I believe that this limitation is a strength in this current research study. Instead of using 20 participants, this study used 35 learners in order to understand their perceptions. Furthermore, teachers were considered to be important to explore the purpose of this study.

### **3.3.3 Sampling**

This study used a convenience sampling strategy in choosing the seven schools that participated in this study. Convenience sampling is defined as a type of sampling that is non-random where the targeted population is easily accessible and meets certain criteria (Etikan, Musa & Alkassim, 2016). Since this study was qualitative in nature, and the aim was to collect rich descriptions, the study sample size was limited (Cohen & Morrison, 2007). Using a limited sample size is characteristic of qualitative research and specifically phenomenographic research design (Creswell, 2013; Ornek, 2008; Nieuwenhuis, 2007). This current study was well suited to a smaller sample of which a larger sample could have resulted in generalisation which is not the aim of this research (Patton, 2014; Yin, 2014; Creswell, 2013).

In a qualitative research, there are no hard rules for defining a sample size in a research investigation, hence the justification of the sample size for this current study (Etikan et al., 2016). Additionally, literature shows that qualitative data takes time to collect and analyse, therefore, this means a small sample size is essential (Patton, 2014; Creswell, 2013). Literature shows that when the sample size is large in qualitative research, it makes it impossible to make strong interpretations (Yin, 2014; Creswell, 2013). It was hence decided in this study to include seven primary schools around Gauteng province. In each school, five learners participated which gave a total of 35 learners that participated in this current study. This sample size was always





going to be too small to represent the entire province of Gauteng, nevertheless, the purpose of this study was to explore the factors that influence learners’ perceptions of learning science in the zoological gardens.

Teachers were also added as participants in this study. The rationale for the inclusion of teachers in this research was motivated by the asset-based approach. Literature has shown that teachers are important assets in teaching and learning (Myende, 2015). Thus, it was necessary to include them in order to explore learners’ perceptions. Therefore, ten teachers were also participants of this study. From the six schools, there was one teacher participant except for one school that had four teacher participants which gave a total of 10 teachers in this current study. The selection of participants was based on Stake’s (2005:238) “uniqueness criteria of the nature of the case and other contexts” as shown in Table 3.3 below.

**Table 3.3: Selection of participants**

Uniqueness	Characteristics	
	Teachers	Learners
Nature of the case	<ul style="list-style-type: none"> <li>• Teach in primary school.</li> <li>• Teach any science subject (Natural Sciences, Technology, Mathematics).</li> </ul>	<ul style="list-style-type: none"> <li>• Are in Grade 3,4,5,6 or 7</li> </ul>
Contexts	<ul style="list-style-type: none"> <li>• They are going to visit the National Zoological Gardens (Pretoria zoo).</li> <li>• Willingness to participate in this study.</li> </ul>	

Table 3.4 below provides a summary of the learner participants in this current study. The table shows an overview of the learners’ age, gender and Grade, and the information about age and Grades confirm the participants’ maturity. For ethical purposes, the participants and schools are given pseudonyms.



**Table 3.4: Summary of learner participants**

Schools	Learner's name	Gender	Age	Grade	Schools	Learner's name	Gender	Age	Grade
A	A	Female	11	6	B	F	Female	11	6
	B	Female	11	6		G	Female	10	5
	C	Female	10	5		H	Female	12	7
	D	Female	9	4		I	Male	11	6
	E	Male	12	5		J	Male	11	7
C	K	Female	11	5	D	P	Male	9	4
	L	Female	12	6		Q	Female	12	7
	M	Male	11	5		R	Female	12	6
	N	Male	12	7		S	Female	11	6
	O	Male	11	7		T	Male	11	6
E	U	Female	10	4	F	AA	Female	9	3
	V	Female	11	5		BB	Female	9	3
	W	Female	11	5		CC	Female	10	3
	X	Female	10	4		DD	Male	8	3
	Y	Female	10	4		EE	Male	10	3
G	FF	Female	8	3					
	GG	Female	9	3					
	HH	Male	9	3					
	II	Male	10	3					
	JJ	Female	8	3					

Table 3.5 below provides a summary of the teacher participants in this current study. The table shows an overview of the teachers' teaching experience, the subjects they teach and provides their professional qualifications. For ethical reasons, the participants are given pseudonyms. The abbreviations used in the table below refers to the following subjects (Department of Basic Education, 2011);

NS: Natural Sciences



NST: Natural Sciences and Technology

SS: Social sciences

**Table 3.5: Summary of teacher participants**

Schools	Teacher's name	Teaching experience	Grade teaching	Subject teaching
<b>A</b>	Ms Kagiso	3 years	4, 5 and 6	Mathematics
<b>B</b>	Mrs Zwane	31 years	7	NS
<b>C</b>	Mr Makhubele	26 years	5 and 7	NST
<b>D</b>	Mr Mahlangu	1 year 6 months	6 and 7	NS & SS
<b>E</b>	Mr Tumi	28 years	5	NST
	Mrs Lerato	27 years	4	NST
	Mr Tshepo	23 years	6 and 7	NST and NS
	Ms Lebo	3 years	5	NST
<b>F</b>	Mrs Tshidi	2 years	3	Foundation phase subjects. Mathematics, Life Skills, English and Sepedi
<b>G</b>	Ms Zinhle	3 years	3	Foundation phase subjects. Mathematics, Life Skills, English and IsiNdebele

### 3.3.4 Data collection

In gathering data in this study, the researcher used multiple methods of data collection, namely, interviews, observations and drawings. The three research methods were employed as I sought “convergence and collaboration” (Bowen, 2009:28), and I believed that the use of multiple methods provided “a confluence of evidence that breeds credibility” (Eisner, 1991: 58). For this current study, the interviews were used as a main data collection method, whereas observations and drawings were used as secondary methods (Bowen, 2009). A summary of the methods used to collect data in this study is presented in Table 3.6 below.



**Table 3.6 Summary of the data collection process**

Questions	Data collection tools	Participant	Purpose
How do learners perceive learning science in the National Zoological Gardens?	Interviews Observations	Learners and teachers	This research question gave the researcher an in-depth understanding of how learners perceive learning at the zoological gardens.
How does the visit to the National Zoological Gardens influence learners' learning science?	Interviews Observations Drawings	Learners and teachers	This research question gave an insight into the influence of the zoological gardens on learners.
How does the visit to the National Zoological Gardens influence learners' attitudes towards learning science?	Interviews Observations	Learners	This research question revealed the influence of the zoological gardens on learners' emotional and personal domain

#### **3.3.4.1 Semi-structured interviews**

Semi-structured interviews were used to collect data. According to Wahyuni (2012:73), semi-structured interviews aim to “facilitate the interviewees to share their perspectives, stories and experience regarding a particular social phenomenon being observed by the interviewer”. The interviews were documented by making audio recordings.

As this study used semi-structured interviews, I was aware of their limitations (Denscombe, 2007). My effect as an interviewer is when participants answer interview questions in a way that I would like them to (Merriam, 2009; Denscombe, 2007). In dealing with this limitation, the participants were informed at the beginning of the interviews that, the researcher is more concerned with what they had to share than the research study's aim. Additionally, during the interviews, I was cautious of my values and bias. Open-ended questions were used to allow participants to describe their perspectives.

#### **3.3.4.2 Observations**

My role during the observation was that of a non-participant observer (Patton, 2014). This type of observation was purposively chosen so that I can observe the participants'



behaviours and actions without my involvement (Henning et al., 2011). I used field notes to document the proceedings during the observations (Given, 2008). In this study, the field notes were collected during and immediately after the zoological gardens observations (Given, 2008; Bogdan & Biklen, 2007). In qualitative data collection, there are limitations when using field notes because they may contain the researcher's biases (Cohen & Morrison, 2007). To minimise the researcher's bias, the themes from the field notes were triangulated with other data collection methods such as the drawings and interviews to enhance the credibility and confirmability of the study (Wahyuni, 2012; Bowen, 2009).

### **3.3.4.3 Drawings**

Research has shown that it is challenging to assess learners' learning of science in an informal learning environment (Rennie & McClafferty, 1995). According to Birney (1995), the use of tests does not entirely reveal the influence of learners' learning of science outside the classroom, because learning in informal environments is personal (Rennie, Feher, Dierking & Falk, 2003). Hence a drawing instrument was used.

A drawing instrument is a good tool to assess learners' learning in an informal environment (Cainey, Bowker, Humphrey & Murray, 2012) because it gives learners the freedom "to express their knowledge without limitation of language" (Alerby, 2000: 208). Brooks (2009) and Cox (2005) have elaborated that when learners draw, that allows them to enthusiastically describe their reality different from just imitating a given reality.

For this current study, the 35 learners that participated were requested to draw their favourite animal found at the zoological gardens during their pre and post interviews. The drawings were used to gather more information on how the zoological gardens influences learners' learning which enriched this study. This instrument was also used to validate the data collected from the interviews and observations.

### **3.3.4.4 Data collection process**

The data collection process in this study took place in two phases. These phases are described below.

#### **Phase 1: Preparations**



This phase involved selecting the seven schools to participate in this study. The researcher had to first obtain ethical clearance from the University of Pretoria. Once the ethical clearance was obtained, I obtained permission from the Gauteng Provincial Department of Education to collect data in the schools around Gauteng. I then approached the National Zoological Gardens in Pretoria Gauteng, and I was granted permission to collect data. I was given a list of schools that had made appointments to visit the zoological gardens. I contacted several schools to participate in this study, and I received permission from seven schools. I then made arrangements with the schools to come and collect data on different dates. Table 3.7 below shows the schedule of data collection in each school.

**Table 3.7 Schedule of data collection in different schools**

Schools	Pre-interviews	Observations at the zoo	Post-interviews
A	24 May 2019	29 May 2019	03 June 2019
B	27 May 2019	30 May 2019	04 June 2019
C	6 June 2019	11 June 2019	13 June 2019
D	10 July 2019	16 July 2019	18 July 2019
E	17 July 2019	25 July 2019	29 July 2019
F	19 August 2019	22 August 2019	26 August 2019
G	05 August 2019	08 August 2019	12 August 2019

## **Phase 2: Data collection**

This phase involves the collection of data during pre-interviews, observations at the zoological gardens and post interviews.

### **Pre-interviews**

The data collection process started with pre-interviews. Schools were visited on different dates. The interviews were conducted with 5 learners and 1 teacher per school, except for school E that had 4 teachers that participated. As explained above, a semi-structured interview approach was used. The purpose of the interviews was to



allow the researcher to explore the factors that influence learners' perceptions of learning science in the zoological gardens.

Learners were interviewed in groups of 5 per school in their classrooms. I interviewed the learners during break time. At the beginning of the interview sessions, I requested the learners to draw any animal they were looking forward to seeing at the zoological gardens. I gave learners about 10-15 minutes to draw. Then, I started asking the interview questions in their group. Learners' group interviews lasted about 35 to 40 minutes with each school. The interview schedule contained 17 questions. The interviews were conducted in learners' native languages to allow them to express themselves as clearly and accurately as possible. I then translated the interviews into English.

After my interview with the learners, I interviewed their teacher/s. I interviewed six teachers individually and four teachers from school E in a group. Teachers from school E requested to be interviewed in a group and that was suitable for this study since it was phenomenographic in nature. The interviews lasted about 30 to 35 minutes. All the interviews were conducted face-to-face.

### **Observations at the zoological gardens**

Each school was observed once, equalling a total of seven schools observed. For ethical purposes, only learners whose parents gave consent and teachers who gave permission were observed. All the observations were conducted on different days and according to the school scheduled visit to the zoological gardens. The observations of participants from each school lasted between two hours and three hours per visit. In each school, I was standing in a position where I did not obviously disturb learners and teachers' experience of the zoological gardens visit, but I was in a position where I could observe and listen to participants (Marshall & Rossman, 2010).

Several learners visited the zoological gardens, but only five learners were selected per school from the population of learners. The seven schools (A, B, C, D, E, F & G) that participated in this study visited the National Zoological Gardens at Pretoria South Africa, on different days. The teachers divided some of the learners into groups of 30-40 learners per group prior to their arrival at the zoological gardens (School B, D & G).



In other schools, the zoological gardens educators divided the learners into groups of 50-60 learners per group (School A, C, E & F). Upon arrival to the zoological gardens, learners were welcomed with a short lesson about the rules of the zoological gardens. The lesson lasted between 10-15 minutes. The learners were taught about the importance of not littering and keeping the zoological gardens environment clean. The zoological gardens educators then continued by separating the groups divided to present lessons to learners per group. The learners were not provided with worksheets by either the teachers or the zoological gardens educators. The lessons lasted about 15-20 minutes per group.

The learners from schools A, B, C, D and E were presented with lessons about reptiles. These lessons introduced the learners to the world of reptiles. The lessons highlighted the importance of reptiles, their groups and behaviour. During the lessons, the emphasis was on snakes and their behaviour. The zoological gardens educators had inanimate objects during the lessons that were used for learners to further explore the eggs of snakes, their skins and various bones. Learners also had a closer look at some non-venomous snakes but these were also inanimate objects, not real snakes.

Since the learners in schools F and G were in the foundation phase, the zoological gardens educators presented a lecture about the “National Symbols” and included the “Big 5” in their presentation. During the lessons, learners were exploring different names and features of animals that are shown on the banknotes of South Africa. Furthermore, these learners learned about the diverse colours of the South African National flag.

### **Post-interviews**

The data collection in this study ended with post-interviews. Schools were visited on different dates. The interviews were conducted with 5 learners and 1 teacher per school, except for school E that had 4 teachers that participated. With school E, one teacher did not participate in the post-interviews, he explained that he did not manage to go to the zoological gardens.

Similarly, with pre-interviews, learners were requested to start by drawing. The learners were given 10-15 minutes to draw an animal they enjoyed seeing at the





zoological gardens. The interviews lasted less as compared to pre-interviews. Learners' post-interview questions contained 10 questions while teachers questions contained 6 questions.

### **3.5 Data analysis**

Data analysis in a Phenomenographic qualitative research could be carried out in different ways (Larsson & Holmstrom, 2007). In this current study, I analysed data that was raw from my observations field notes, interview transcripts and drawings data (Patton, 2014). I used inductive analysis to examine the data collected (Given, 2008). This method of analysis was used because the aim was not to use a predetermined theory but to search for themes that are recurring from the raw data and interpret them to gain a deeper understanding of learners' perceptions (Braun & Clarke, 2006).

Creswell's (2009) steps of analysis were followed when analysing the data collected. In the first step, data is organised and prepared. This can be done by transcribing the audio recordings from the interviews through verbatim, which was the case in this current study (Creswell, 2009). In the second step, the data is read in order to gain participants' sense of meaning (Spencer, Ritchie & O'Connor, 2003). For this study, data from the interview transcriptions and observation field notes were read. The third step was to code the data into different sections and colour-coded sections that showed the same ideas (Creswell, 2009; Nieuwenhuis, 2007). The third step ultimately leads to the organising of similar codes identified into categories (Creswell, 2009; Nieuwenhuis, 2007). The categories were then grouped into subthemes (Creswell, 2009), where the subthemes are organised onto major themes (Nieuwenhuis, 2007). To conclude the data analysis process, the meaning of the data collected is interpreted from the literature and from the role of the researcher.

### **Data presentation**

In this study, data were presented in themes and categories. The data presented in each category match that particular category. However, in the case where there is a link between two categories, then data could be inserted into another category for emphasis and in-depth descriptions. Table 3.8 below outlines the data presentation from this study and also how it links to the conceptual framework.



**Table 3.8: Data presentation and how it links to the conceptual framework (Photo, 2022)**

Theme	Categories	Conceptual framework
Perceptions of learning science in the zoological gardens	Learners' expectations going to the zoological gardens.	Links with the personal domain.
	Learners' perceptions about learning in the zoological gardens.	
	Learners' experiences at the zoological gardens.	
How the visit to the National Zoological Gardens influence learners' learning science	Learners' descriptions of knowledge learned at the zoological gardens.	Links with the cognitive domain. This category describes the knowledge learners acquired.
How the visit to the National Zoological Gardens influence learners' attitudes towards learning science?	Learners' responses towards animals.	Links with the emotional and the social domain as described in the conceptual framework.
	Learners' interactions	
	Learners' interest at the zoological gardens.	

### 3.6 Trustworthiness

Trustworthiness in qualitative refers to the way in which the researchers “influence the audience that the findings in the study are worth paying attention to and that the research is of high quality” (Maree, 2012: 305). Furthermore, in qualitative research, trustworthiness measures the level at which data analysis is trustworthy and realistic (Marshall & Rossman, 2010). In this current study, I used Lincoln and Guba’s (1985) procedures of trustworthiness specifically, credibility, transferability, dependability and confirmability.



### **3.6.1 Credibility**

When the findings of a study are understood as originating from the raw data of participants, this is referred to as credibility (Silverman, 2011; Shenton, 2004; Lincoln & Guba, 1985). According to Shenton (2004), credibility can be attained either through triangulation, crystallisation, extended field engagement or participant checks. In this current study, triangulation was achieved by using multiple participants and a variety of data collection instruments such as interviews, observations, and drawings.

### **3.6.2 Transferability**

According to Marshall and Rossman (2010) and Merriam (2009), transferability is the level to which a study's findings can be transferred to other comparable circumstances. In this current study, transferability was obtained by providing descriptions of the methodology and background of this study which were extensive. Using the thick descriptions, I captured participants' knowledge and understanding of learners' learning science at the zoological gardens (Mertens, 2014; Bogdan & Biklen, 2007). Since this study used a phenomenographic research design, this allowed a demonstration of participants' experience as "multi-layered" (Larsson & Holmstrom, 2007; Merriam, 2009).

### **3.6.3 Dependability**

Marshall and Rossman (2010) explain dependability as the extent to which a study's findings can be constant over time. Since this study is using an interpretivist paradigm, it is understood that knowledge is constructed personally, informally and experientially (Scotland, 2012; Nieuwenhuis, 2007). To enhance dependability in this current study, an audit trail strategy was used (Cohen & Morrison, 2007). For an audit trail to be provided in this study, observation notes, interview audios, transcripts, and learners' drawings were documented (Cohen & Morrison, 2007).

### **3.6.4 Confirmability**

According to Miles and Huberman (1994:65), confirmability refers to the "extent to which a researcher admits his or her own predispositions". In order to adhere to the value of confirmability in this current study, I recognise that the process of data analysis could have been impacted by my beliefs and values as a former science



teacher in primary school. Therefore, in an attempt to minimise my bias, audio recordings from the interviews were transcribed verbatim and field notes from the observation tool were maintained during the data collection and analysis stage (Gall, Gall & Borg, 2006).

### **3.7 Ethical considerations**

Literature shows that ethical consideration is an important aspect of a research study (Kvale & Brinkmann 2009; Murray, 2006). For this current study, I applied for ethical clearance from the Research Ethics Committee before I embarked on data collection, and this is in line with the ethical guidelines of the University of Pretoria. When I received ethical clearance from the Research Ethics Committee, I continued and applied to the Department of Education to carry out my research in the schools (see appendix 1.1). Since data was also to be collected at the zoological gardens, I applied for ethical clearance from the Research Ethics Committee at the Zoological Gardens in Pretoria South Africa.

Before beginning with data collection, permission was sought from the science teachers to participate in this study (see appendix 1.3). Science teachers were invited to take part in this study through an invitation letter (Drew, Hardman & Hosp, 2007). The invitation letter informed the participants of their rights such as to withdraw from the study anytime they did not want to participate anymore (Drew et al., 2007; Eide & Kahn, 2008).

Since learners were minors and expected to participate in this study, permission was sought from their parents/guardians to take part in this study (see appendix 1.4). Similar to teachers, parents were given a letter that explained the purpose of the study and what was expected from their child (Drew et al., 2007).

#### **3.7.1 Protecting participants from harm**

In this current study, I have ensured that I maintain a good and trusting relationship with the participants so that they are at ease, and I could prompt the best possible data (Drew et al., 2007; Cohen & Morrison, 2007). In this study, there was no physical threat posed to either the teachers, learners, or animals at the zoological gardens. However, because participants were being observed and interviewed, that could have



created some emotional discomfort (Neuman, 2011; Drew et al., 2007; Cohen & Morrison, 2007). To ensure that participants were at ease during data collection, I continuously explained to them the aim and their role in this study (Cohen & Morrison, 2007). To further minimise risks, trust between me and the participants was built through extended field engagement (Babbie & Mouton, 2001).

### **3.7.2 Participants' confidentiality and anonymity**

In this current study, I have made efforts to sustain the confidentiality of the participants during data collection and after data was collected (Henning et al., 2011). The participants and the schools' real names were not used; they were given pseudonyms. As a result of administrative roles fulfilled in schools, school principals and relevant HoDs were made aware of the teachers that gave permission to participate in this study.

### **3.8 Conclusion**

In this chapter, I outlined plans used to explore learners' perceptions of learning science in informal learning environments particularly the zoological gardens. This chapter elaborated on the selection of the interpretivist paradigm and why it was selected. The chapter also provides an explanation for a selection of the research approach, research design, sampling, data collection instruments and the plans for data analysis. Furthermore, measures of how trustworthiness was maintained were discussed, followed by how ethical consideration was adhered to during the development of the study. In the next chapter, I present the results of this study.



## CHAPTER FOUR: DATA PRESENTATION

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*When you know better... You do better*

*-Maya Angelou*

### 4.1 Introduction

This chapter presents the data that was collected from (1) interviews, (2) observations and, (3) drawings. I present the data that sought to answer the question: *What factors influence learners' perceptions of learning science in an informal learning environment such as the National Zoological Gardens?* In order to explore the main research question, three sub-questions guided this study, namely: (1) *How do learners perceive learning science in the National Zoological Gardens?* (2) *How does the visit to the National Zoological Gardens influence learners' learning science?* and, (3) *How does the visit to the National Zoological Gardens influence learners' attitudes towards learning science?* The section below provides a detailed data presentation guided by the three sub-questions of this study.

### 4.2 The perception of learners' learning at the National Zoological Gardens

This section explores the first sub-question: *How do learners perceive learning science in the National Zoological Gardens?* I have explored this question by focusing on learners' expectations going to the zoological gardens, learners' perceptions about learning in the zoological gardens, and learners' experiences at the zoological gardens.

#### 4.2.1 Learners' expectations going to the zoological garden

Learners were asked through semi-structured interviews to explain what they thought they would do at the zoological gardens during their visits. Five learners (school B) described learning objectives that connected their science content studied in class with the zoological gardens experience. Some of the learners' responses were as follows:



Researcher: *“What do you think you will do at the zoo”?*

Learner F: *“I want to learn new animals that I am not familiar with especially animals that only eat meat”.*

Learner H: *“I am looking forward to learning how to take care of animals, but only animals that are not dangerous which only eat grass and plants”.*

Learner J: *“I want to learn about reptiles and the type of food they eat”.*

(Pre-interview, school B, 10 May 2019)

Ten learners from schools D, and G described the learning objectives by explaining what they are expecting to learn at the zoological gardens. Their learning objectives did not show a connection between their zoological gardens expectations and the content prescribed in the science curriculum. Some of the learners' comments were as follows:

Researcher: *“What do you think you will do at the zoo”?*

Learner P: *“I think we are going to learn about different animals and how they are different but look the same, like cheetah and leopard”.*

Learner R: *“I want to know which animals I can touch, feed and take care of them like an elephant”*

(Pre-interview, school D, 11 June 2019)

Learner FF: *“I am looking forward to seeing many animals at the zoo and learn what makes them happy”.*

Learner HH: *“I want to see if animals have houses like us and if they do not, where do they go when it is raining”.*

Learner II: *“I want to see and learn about many animals found at the zoo. I am going to ask the zoo guide if animals can be bored, stressed or sad”.*

(Pre-interview, school G, 12 August 2019)

The responses from learners in schools A, C, E, and F showed a lack of learning objectives. These learners did not describe learning objectives for their zoological gardens visits. Below are some of these learners' responses:



Researcher: *"What do you think you will do at the zoo"?*

Learner U: *"I think we will see a giraffe".*

Learner W: *"We are going to see different animals and eat our lunch box".*

Learner X: *"I want to see new animals at the zoo".*

(Pre-interview, school E, 30 July 2019)

Learner M: *"We are going to see our teachers telling us not to run around".*

Learner N: *"We are going to walk in groups".*

(Pre-interview, school C, 27 May 2019)

Learner B: *"I want to see snakes".*

Learner D: *"I do not know".*

(Pre-interview, school A, 10 May 2019)

Learner BB: *"We are going to ride cable cars and see animals".*

Learner EE: *"We are going to see a crocodile".*

(Pre-interview, school F, 13 August 2019)

To have an in-depth understanding of learners' expectations going to the zoological gardens, I asked teachers through semi-structured interviews to explain their reasons for taking learners to the zoological gardens. Mrs Zwane (school B) described a learning objective related to the content of Natural Sciences in Grade 7. She described her learning objective for her learners as follows:

Researcher: *"What are your reasons for taking learners to the zoo"?*

Mrs Zwane: *"I am hoping that my learners would learn what are herbivores, carnivores and omnivores. I also hope that they would learn how to different herbivores, carnivores and omnivores when they see them at the zoo".* (Pre-interview, School B, 10 May 2019)

Four teachers from schools D, E (Mrs Lerato & Mr Tshepo), and G described learning objectives that were not linked to the corresponding content in the science curriculum. Some of these teachers' responses were as follows:





Researcher: *"What are your reasons for taking learners to the zoo"?*

Mr Mahlangu: *"I am hoping that learners will get motivated to learn science after the visit to the zoo. I am expecting learners to learn more about different mammals"*. (Pre-interview, School D, 11 June 2019)

Ms Zinhle: *"I want the learners to learn about different kinds of animals, how they live and their social well-being"*. (Pre-interview, School G, 12 August 2019)

Mrs Lerato: *"We are taking learners for educational purposes. We want them to understand what some animals eat and where they live"*. (Pre-interview, School E, 30 July 2019)

The teachers from schools A, C, E (Mr Tumi & Ms Lebo), and F did not describe any planned learning objectives for their learners' visits. These teachers' objectives were mostly centred around fun, leisure and convenience. When they were asked their reasons for taking learners to the zoological gardens, some of their responses were as follows:

Researcher: *"What are your reasons for taking learners to the zoo"?*

Ms Kagiso: *"We take learners to the zoo because they are young and in foundation phase unlike in high school. I personally want learners to have fun mostly"*. (Pre-interview, School A, 10 May 2019)

Mr Makhubele: *"Learners become fascinated very easily, so we are taking them to the zoo so that they can be fascinated by the animals at the zoo. The zoo is most convenient for the learners and amusing for primary school learners"*. (Pre-interview, School C, 27 May 2019)

Mr Tumi: *"Mostly is it for fun because of the way we arrange and organise the trips. It is less educational because if we take the whole intermediate phase, we are not focusing on certain topics or Grade. It is just for the learners to interact with the outside world, not specifically for educational purposes"*. (Pre-interview, School E, 30 July 2019)

To further understand learners' expectations of learning science in the zoological gardens, teachers' preparations for their learners' zoological gardens visits were also explored. Mrs Zwane (school B), and Mr Mahlangu (school D) explained to have prepared lessons for their learners before the zoological gardens visits. Mrs. Zwane



explained to have presented a lesson that encouraged her learners to carry notebooks during the visit for note-taking and to behave well. Mr Mahlangu explained that his lesson with his learners was to guide them to observe any fascinating activity during their zoological gardens experience and enjoy themselves. For the purpose of this study, these teachers' lessons were not analysed.

Eight teachers from schools A, C, E (Mr Tumi, Mrs Lerato, Mr Tshepo & Ms Lebo), F, and G did not describe any planned educational preparations for their learners' zoological gardens visits. The preparations of these teachers were limited to logistical matters, not educational activities. Some of these teachers' responses were as follows:

Researcher: *"What preparations have been done in class for this visit"?*

Mr Tumi: *"Even if the educators want the trip to be educational, these kids do not take it seriously, moreover that sometimes we do not give them a worksheet. So why waste our energy".* (Pre-interview, School E, 30 July 2019)

Mr Makhubele: *"We have prepared buses and our learners are given permission slips for their parents to sign".* (Pre-interview, School C, 27 May 2019)

Mrs Tshidi: *"Our date of going to the zoo has been booked and we have collected money from our learners. Basically we are ready for the visit".* (Pre-interview, School F, 13 August 2019)

All the ten teachers described to have not visited the zoological gardens before the trips or planned any worksheets for their learners. Mrs Zwane (school B) and Mr Mahlangu (school D) elaborated that they do not use worksheets when visiting informal learning environments, they prefer their learners to write their notes. Ms Kagiso (school A) hoped that the zoological gardens educators will provide learners with worksheets (which they did not).

#### **4.2.2 Learners' perceptions about learning in the zoological garden**

The learners from schools B, D, E, and G mentioned that they are expecting to learn about husbandry practices, animal welfare, biology and safety around animals at the zoological gardens. Some of the responses of these learners were as follows:



Learner F: *"I want to learn new animals that I am not familiar with especially animals that only eat meat. I also want to learn how to take care of different animals and how to take care of their habitats".*

Learner G: *"I want to learn how to be safe around a lion, learn if the lion is herbivore, carnivore or omnivore. I think we are going to learn that other animals are dangerous and others are not dangerous".*

Learner I: *"I am expecting to go to the zoo and learn about different reptiles such as snakes specifically cobras and find out which ones are dangerous".*

(Pre-interviews, school B, 13 May 2019)

Learner GG: *"I want to go to the zoo, learn and write different names of the animals, learn what they eat and what they are allowed to drink".*

Learner JJ: *"I am expecting to go to the zoo to learn how animals live, what they eat and what they drink. I also want to learn which animals I am safe with when near them".*

(Pre-interviews, school G, 22 August 2019)

Learner P: *"I think we are going to learn about different animals and how they are different but look the same, like cheetah and leopard".*

Learner R: *"I am looking forward to going to the zoo to see and learn about lots of animals. I want to know which animals I can touch, feed and take care of them like an elephant".*

(Pre-interview, school D, 11 June 2019)

During the visits to the zoological gardens, I observed that most learners were carrying notebooks and phones during their observations (field notes, schools A-E). Learners were observed taking down notes during the zoological gardens lectures and also during their observations of animals. I also observed that they were learners who were recording the zoological gardens lectures with their phones. When learners were asked why they were recording and taking down notes, they explained that it will assist them after their visit to recall what they learned and observed. I further noticed that most learners observed monkeys for long, taking videos and pictures of these animals as compared to other animals (field notes, schools A-E).



During the lectures presented by the zoological gardens staff, I also observed that most learners from schools B and D had prepared questions to ask the zoological gardens educators. These learners were reading the questions from their notebooks and the questions were not based on the presented lesson. Some questions these learners asked were as follows:

Learner from school B: *“How can one separate between animals that eat meat only, meat and plants and plants only?”*

Learner from school B: *“How can we take care of animals?”*

Learner from school B: *“What are the names of the animals that are new to the zoo?”*

Learner from school B: *“Which animals are the most dangerous at the zoo and why?”*

Learner from school D: *“How can I see the difference between a cheetah and a leopard?”*

Learner from school D: *“Can I play with a baboon? Is a baboon and chimpanzee the same animal?”*

Learner from school D: *“Why are animals at the zoo caged?”*

Furthermore, when learners were observing animals, I noticed that they were reading the information boards in most animals' exhibits and some of the learners were writing down the information from the boards. Moreover, I also observed that many learners asked questions during their observations for clarity and understanding.

#### **4.2.3 Learners' experiences at the zoological gardens**

The experiences being communicated by the participants were fun and motivating. I have observed this enjoyable and motivating experience from learners during their visits to the zoological gardens, during learners' post-interviews and teachers' post-interviews.

When the zoological gardens educators presented their lectures during the visits, I have observed expressions from learners that showed enjoyment. Most learners were showing facial expressions and behaviour of enjoying themselves (field notes, schools A-G). During the lectures, learners were showing expressions of joy, excitement, they were smiling and they were actively involved in answering questions. The learners



were happy and they would laugh when they could correctly answer questions asked by the zoological gardens educators (field notes, schools B & D). I have also observed that learners were waiting impatiently for the zoological gardens educators to confirm if what they answered was correct or incorrect. They would shout “yes” when they got it right. The learners looked excited after the lectures (jumping, smiling and rushing out of the room) and stated that they were looking forward to seeing animals they had just learned about.

The learners were observed taking an active role during the zoological gardens visits (field notes, schools A-E). Learners were the ones deciding on what to observe and for how long. In most animals’ exhibits, the expressions were that of enthusiasm and fascination among both boys and girls. Throughout the zoological gardens observations, learners were amused and calling their peers to come and observe with them, reading information boards at the exhibits and pointing at the animals. I also observed that when learners were approaching a specific animal exhibit, they would try to get the animals’ attention by calling its name multiple times with laughter until they could see the animal. This was by no means attributed to misbehaviour, but rather was an indication of excitement by learners who were keen to see the animals.

Learners further stated how they liked and appreciated seeing mammals such as a lion, leopard or gorilla and also learning about those animals (post-interviews, schools A, D, E & F). Some learners also used the term “big” to describe a gorilla or the comical observation of the “monkey-eating its feces”. I observed that learners expressed excitement when they were explaining their experience at the zoological gardens. Some of these learners’ comments were as follows:

Researcher: *“How was the visit to the zoo?”*

Learner B: *“At the zoo, I enjoyed seeing a gorilla because it was very big”.*

Learner D: *“I liked seeing different types of animals because it was fun and enjoyable”.*  
(Post-interview, school A, 20 May 2019)

Learner T: *“It was exciting being at the zoo since it was big and it had lots of animals”.*  
(Post-interview, school D, 16 August 2019)



Learner X: *"I really liked and enjoyed learning about different kinds of animals, so that when our teacher ask questions about animals, we are able to answer"*.

Learner Y: *"At the zoo, I enjoyed learning about animals, what they are used to, what makes them angry, such things"*.

(Post-interview, school E, 21 August 2019)

Learner EE: *"I enjoyed mostly seeing monkeys because it was interesting to see a monkey eating its feces and that made me laugh"*.

(Post-interview, school F, 26 August 2019)

To have a detailed understanding of learners' perceptions and experiences at the zoological gardens, I asked the teachers to explain their observations of learners' experiences during the visits. Four teachers explained that their learners were excited during the lectures presented by the zoological gardens educators, they observed their learners trying to communicate with the animals and some expressed fascination when they viewed animals' exhibits (Ms Kagiso, Mrs Zwane, Mr Makhubele, and Ms Zinhle).

Ms Kagiso (school A) stated that her learners *"enjoyed the trip, enjoyed interacting with each other and gained extra knowledge about animals"*. She detailed that her learners viewed the zoological gardens trip as an enjoyable experience since they were very happy during the visit, they were running around, they were smiling and they looked amazed when observing animals. Other teachers commented that:

*"Outdoor learning is good and is motivating for learners. Like you get to see even those learners you think are quiet in class, talking and asking a lot of questions at the zoo. Learners were excited at the zoo"*.

(Post-interview, Ms Zinhle, school G, 22 August 2019)

*"During the zoo observations, learners left us teachers and went to have fun while viewing animals. We asked them later why they left us, they said they could not wait. Learners said that they were excited to go see animals they learnt about in class and during their zoo lecture. They were explaining what they saw with excitement "*.

(Post-interview, Mrs Zwane, school B, 20 May 2019)



*“Learners were fascinated when animals were moving, they enjoyed seeing animals eat and making sounds. Learners were asking questions with excitement such as; why certain animals were making sounds and why monkeys could jump from tree to tree”.*  
(Post-interview, Mr Makhubele, school C, 06 June 2019)

### **4.3 The influence of a visit to the National Zoological Gardens in learners’ learning science**

This section explores the second sub-question; *What is the influence of a visit to the National Zoological Gardens on learners’ learning science?* I have explored this question by focusing on learners’ descriptions of knowledge learned at the zoological gardens.

#### **4.3.1 Learners’ descriptions of knowledge learned at the zoological garden**

Ten learners described knowledge learned at the zoological gardens that related to the science curriculum studied in the classroom (schools B and G). Some of these learners’ responses were as follows:

Researcher: *“What did you learn at the zoo?”*

Learner H: *“I have learnt that a lion is a very dangerous animal hence it is kept far from other animals. I also saw that a lion was given meat only unlike a giraffe which was given grass. Our teacher explained that it is because a lion only eats meat”.*

Learner G: *“I saw different snakes at the zoo. Some were big and some were tiny. The teacher at the zoo told us that snakes only eat animals, and it depends on the type of snake”.*

Learner I: *“I learned that snakes could eat animals like worms, frogs or even rats. Our teacher refers to such animals as carnivores”.*

(Post-interview, school B, 20 May 2019)

Learner HH: *“I have learned about a fish and a cheetah. A cheetah is the fastest animal at the zoo and a fish can breathe well while inside the water”.*

Learner II: *“I learned about the fish and an elephant. A fish can be eaten by a pigeon and an elephant trunk is very long and can use it for breathing and grabbing things like food”.*





(Post-interview, school G, 22 August 2019)

The learners from school D could also recall knowledge learned at the zoological gardens. These learners' descriptions of knowledge learned were not linked to a specific science curriculum, it was only linked to the zoological gardens experience. However, it was still scientific knowledge. Some of these learners' responses were as follows:

Researcher: *"What did you learn at the zoo"?*

Learner P: *"I observed that there are some animals such as monkeys that live on top of the trees. While gorillas were inside a cage. It was difficult for us to see these gorillas because they were hiding. But there were very big when we saw them".*

Learner S: *"I have learned at the zoo that we should not touch wild animals such as a cheetah and a leopard, we should stay far away to be safe. Our zoo educator also told us that a cheetah has dark spots, while a leopard does not have dark spots but dark circles with lighter skin inside the circle".*

Learner R: *"Many animals live in different places such as on trees, inside the water and some in glasses. Monkeys live on top of the tree, fish and crocodiles in water and snakes inside glasses. But our teacher explained that snakes are in glasses because they are at the zoo".*

(Post-interview, school D, 16 August 2019)

The learners from schools A, C, E, and F could not describe any knowledge learned at the zoological gardens even when I probed some of their answers. Some of these learners' responses were as follows:

Researcher: *"What did you learn at the zoo"?*

Learner C: *"Different types of animals".*

Researcher: *"What do you mean"?*

Learner C: *"That animals are different".*

Learner E: *"I do not remember".*

(Post-interview, school A, 20 May 2019)





Learner L: *"I have learned how animals live at the zoo?"*

Researcher: *"How do animals live at the zoo?"*

Learner L: *"They live in different places".*

Learner O: *"I have learned that a leopard and springbok do not get along".*

(Post-interview, school C, 6 June 2019)

Learner V: *"I have learned about snakes".*

Researcher: *"What did you learn about snakes?"*

Learner V: *"That snakes have different colours".*

Learner Y: *"I have learned about the big five".*

Researcher: *"What about the big five?"*

Learner Y: *"That we find them in our money".*

(Post-interview, school E, 21 August 2019)






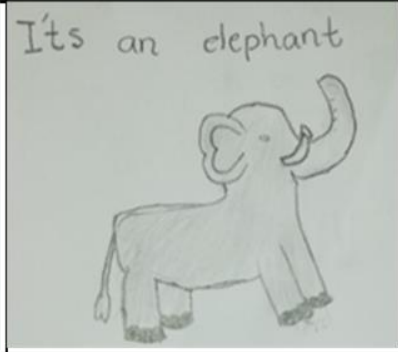
To get a comprehensive understanding of learners' descriptions of knowledge learned during their visits, I requested the learners to draw an animal before and also after the visits to the zoological gardens. The drawings' results showed that all the learners drew vertebrates before and after their zoological gardens visits. The most drawn scientific categories were mammals and reptiles. Most learners drew mammals such as a lion, monkeys, giraffes and elephants, while the learners that drew reptiles all drew snakes.

From the drawings, some learners drew domestic animals as the animals they were looking forward to see at the zoological gardens (schools A, B, C, F & G). These learners were between the ages of 8-12 years old. All of the learners who drew domestic animals before the zoological gardens visits, drew wild animals after the trips.

Before the visits to the zoological gardens, learner F and G (school B) drew cats, and after the visits, they drew wild animals such as a giraffe and tiger. Learner G labelled the animal as a "white leopard" even though she drew a coloured animal with stripes. This learner must have confused it with another animal such as a white tiger.

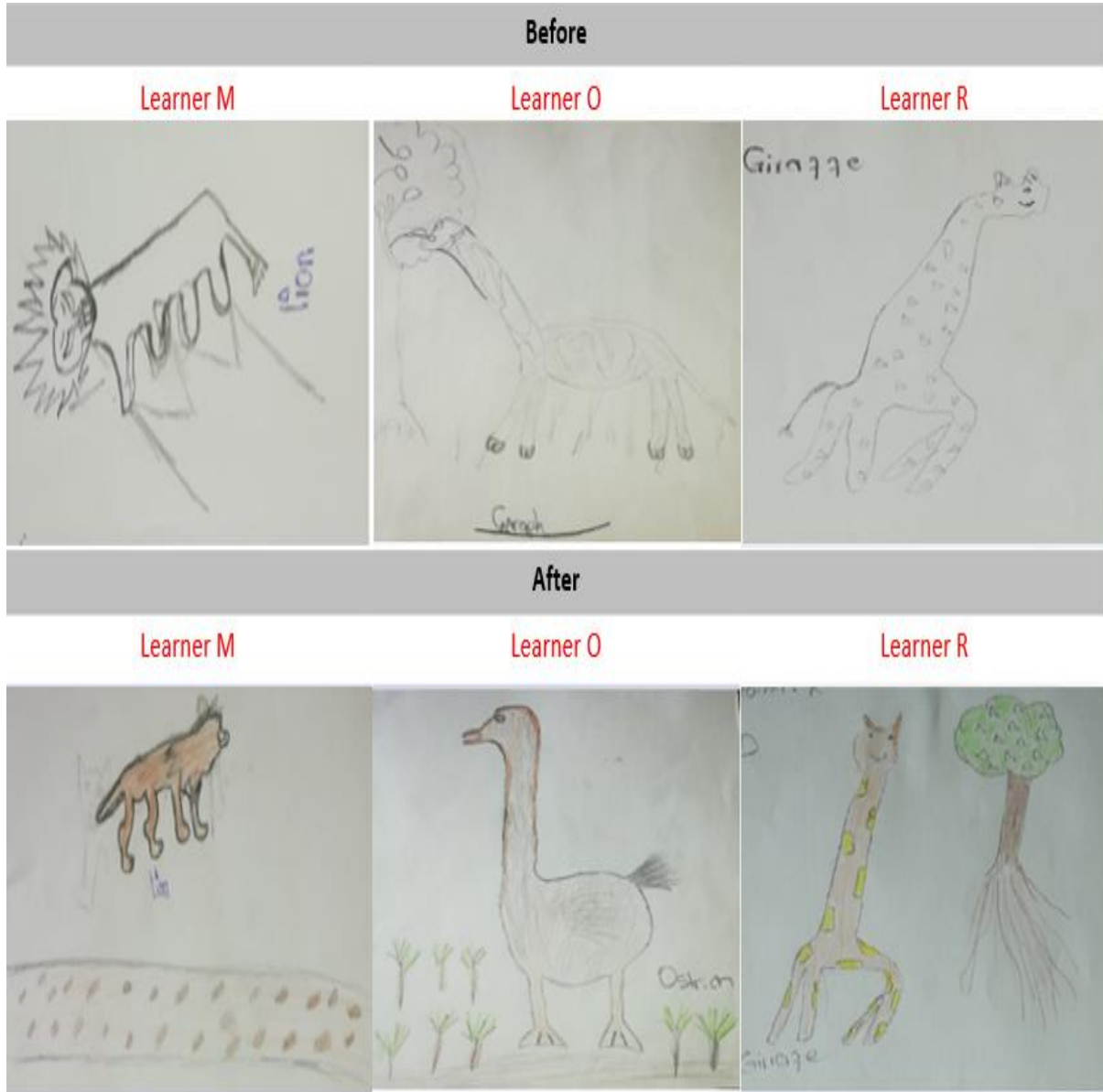
Additionally, the details in the after drawings examples also elaborate on the drawing skills of learners which shows improvement. The table below outlines some of these learners' drawings.

**Table 4.1: Outline of learners' drawings before and after the zoological gardens visits**

Before		
Learner F	Learner G	Learner HH
		
After		
Learner F	Learner G	Learner HH
		

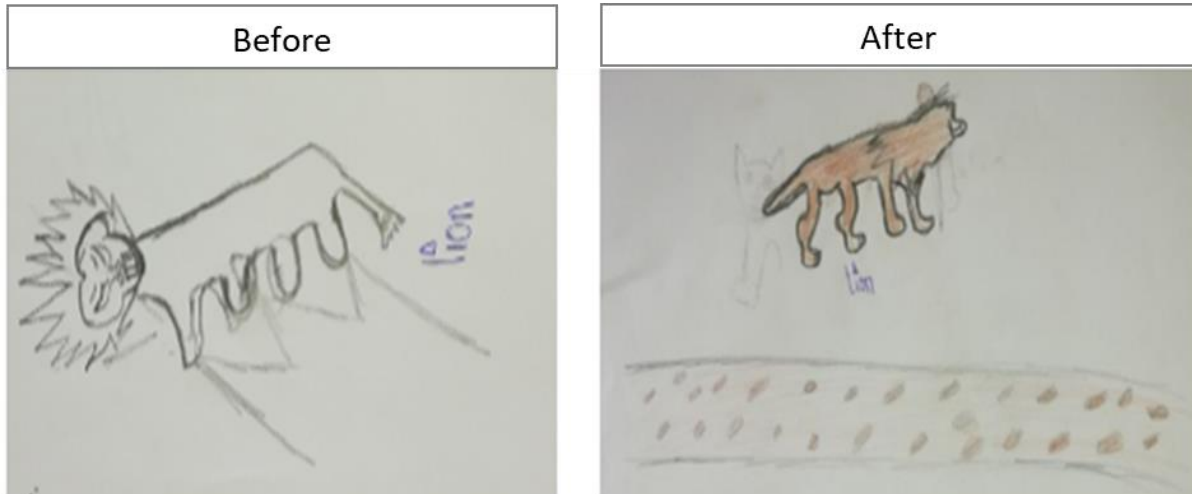
The drawing data also showed that some learners made careful observations of the animals during their visits to the zoological gardens. This was evident when comparing learners' pre and post drawings (schools A, B, C, D, E, F & G). Some of the learners' drawings are outlined in Table 4.2 below:

**Table 4.2: Outline of learners' drawings comparing learners' pre and post drawings**



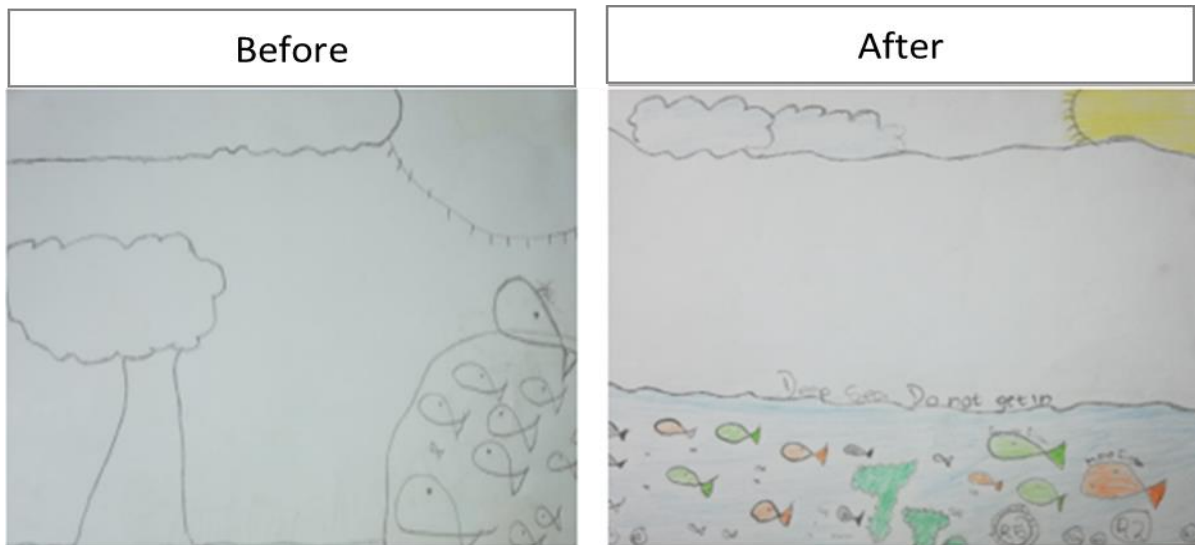
Before the visit to the zoological gardens, learner M (school C) drew a lion which was not detailed and did not show a lion's habitat while the mane was exaggerated and reminiscent of a drawing in a learner's book. After the visit to the zoological gardens, learner M's drawing revealed that he had carefully observed the animal features and also added the habitat of the animal. The drawing of the lion after the visit was detailed when sketching the legs and feet of the animal. The tail and the mane of the animal was also drawn more distinctly, and there was a positive change in how the tail and

the mane were drawn. The post drawing of this learner was also colourful compared to his pre-drawing. Learner M's drawings are presented in Figure 4.1 below:



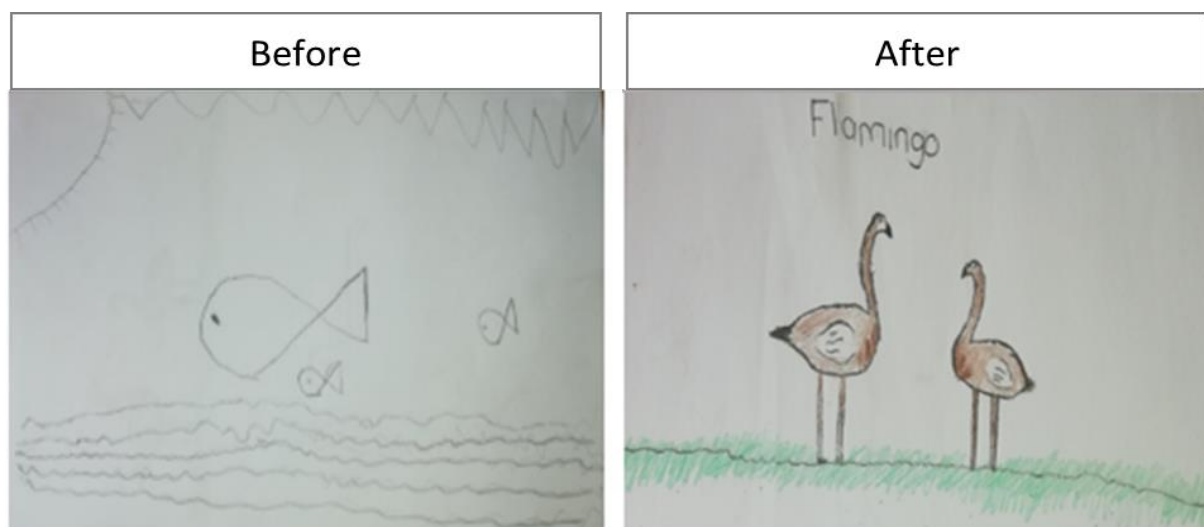
**Figure 4.1:** Version one (left) of learner M's drawings shows his pre-drawing, version two (right) shows his post-drawing (Boy, 11 years)

Before the visit to the zoological gardens, learner C (school A) pre-drawing was simple and colourless, while the environment drawn such as the sun, tree, water and the clouds were in black and white. This learner did not include any descriptions in her initial drawing. In the post-drawing of this learner, her drawing was more colourful, the environment of the drawn animals was colourful, the sunshine also had colour which can signify a positive feature to the environment, e.g warmth. This learner's drawing was more detailed compared to her pre-drawing. Learner C's drawings are presented in Figure 4.2 below:



**Figure 4.2:** Version one (left) of learner C's drawings shows her pre-drawing, version two (right) shows her post-drawing (Girl, 10 years)

Among the drawing data, learner D's (school A) pre drawings used stylised, simple lines only and her drawing was not colourful. The post drawings showed detailed coloured drawings of the animals (flamingos). This learner observed the shape and colour of the beaks, the positioning and shape of the wings, the long neck which is one of the characteristics of the flamingos and lastly the animals and their environment were colourful and the flamingos were drawn with correct proportions. Learner D's drawings are presented in Figure 4.3 below:



**Figure 4.3:** Version one (left) of learner D's drawings shows her drawing before the zoo visit, version two (right) shows her drawing after the zoo visit (Girl, 9 years)



To have a detailed understanding of learners' descriptions of the knowledge learned at the zoological gardens, I asked the teachers to describe their views of learners' learning at the zoological gardens. Through semi-structured interviews, I probed the teachers to describe any follow-up activities they had prepared to determine learners' knowledge gained at the zoological gardens. For this study, teachers' activities were not analysed. Instead, I only relied on what the teachers reported in the interviews about their activities.

All the ten teachers described that their learners learned at the zoological gardens. Four teachers reported having prepared follow-up activities for their learners after the zoological gardens visits (Mrs Zwane, Mr Mahlangu, Ms Tshidi & Ms Zinhle). Mrs Zwane (school B) and Ms Zinhle (school G) described follow-up activities that linked the zoological gardens experience with the science curriculum.

Mrs Zwane's follow-up activity linked to her learning objectives that were related to the content of Natural Sciences in Grade 7. In her description, learners were expected to discuss what they learnt at the zoological gardens, the advantages and disadvantages of the zoological gardens and if they understood the difference between the herbivores, carnivores and omnivores. Mrs. Zwane stated that most of her learners did well in the activity and her learners could explain and give examples of herbivores and carnivores. Her response was as follows:

Researcher: *"What are your views on learners' learning at the zoo"?*

Mrs Zwane: *"Learners have learned a lot at the zoo and gained knowledge. In the activity I gave the learners after the trip, most of them got the answers correct. I was even impressed by my slow learners who were able to elaborate on what they saw and learned at the zoo. In the activity I gave the learners, they were ticking herbivores, carnivores and omnivores, I was impressed when my smart learners added more animals in the "other" box". (Post-interview, School B, 20 May 2019)*

Ms Zinhle stated in her post-trip interview that they are currently teaching about fish in the syllabus, therefore, as teachers, they ensured that during the trip their learners experienced the zoological gardens aquarium. She indicated that as teachers they assisted learners to get more information and knowledge about the fish during the zoological gardens visit. She said the teachers read the information boards and





explained to their learners during the visit and they made their learners remember the types of fish and their features. She also said that they allowed learners to observe the fish on their own so that they could learn to work independently. Ms Zinhle responded by saying:

Researcher: *“What are your views on learners’ learning at the zoo?”*

Ms Zinhle: *“The learners did well in the post-activity I gave them about the fish even though they were not oriented by the zoo educators. The information boards helped us teachers to be able to explain to the learners. The learners were able to label the parts of the fish and their fish drawings were very colourful. One learner even asked a question I found interesting after the activity that, she wondered when observing the fish at the zoo how the fish breathe and does not drown inside the water. I was impressed that my learners were asking me questions beyond the activity”.* (Post interview, School G, 22 August 2019)

Mr Mahlangu (school D) and Ms Tshidi (school F) described to have prepared follow-up activities that were based on the zoological gardens visits only.

Mr Mahlangu stated that he gave learners an assignment where they had to write and present what they had learned at the zoological gardens. He said that he was very pleased with the learners’ presentations and their discussions. In his interview, he explained that most learners knew how to *“differentiate between a cheetah and a leopard”* which was a challenge before the zoological garden visit. This teacher’s response was as follows:

Researcher: *“What are your views on learners’ learning at the zoo?”*

Mr Mahlangu: *“Learners were explaining different characteristics of baboons and chimpanzees, saying that most primates live in the trees such as monkeys, except for gorillas which were inside a cage and that most primates are social animals according to their observations and what they were told by the zoo educator”.* (Post interview, School D, 16 August 2019)

Mrs Tshidi explained that her learners could explain in class what they saw at the zoological gardens and stating the animals that were new to them such as a seahorse, penguin, dragons and hyena. She added that most of her learners were able to



differentiate between a cheetah and a tiger in an activity she had given them. Mrs Tshidi's said:

Researcher: *"What are your views on learners' learning at the zoo"?*

Mrs Tshidi: *"Most learners could not differentiate between a cheetah and a tiger in previous activities they have completed in class before the zoo visit. But after the visit to the zoo, I gave them the same activity and most learners did well".* (Post interview, School F, 26 August 2019)

Six teachers did not describe any prepared follow-up activities for their learners after the zoological garden's visits (Mr Tumi, Mr Tshepo, Mrs Lerato, Ms Lebo, Mr Makhubele & Ms Kagiso). I further probed them to elaborate on the zoological gardens influence on learners' learning science, and these were some of teachers' responses:

Researcher: *"What are your views on learners' learning at the zoo"?*

Ms Kagiso: *"They are learning because it is adding to their pre-knowledge. When they come back from the zoo".*

Researcher: *"May you please elaborate how"?*

Ms Kagiso: *"When they got back from the zoo trip, in the classroom they were explaining that they liked this and that. So that showed their learning".* (Post-trip interview, School A, 20 May 2019)

Mr Makhubele: *"Learners learn because during the zoo visit there was a session where they were taught about zoo animals".*

Researcher: *"How did you see that learners learned at the zoo"?*

Mr Makhubele: *"Sadly I was not in the session when they were taught, but my colleagues did say that learners did learn at the zoo".* (Post-trip interview, School C, 06 June 2019)

Ms Lebo: *"Learners have learned because they talk about animals all the time since they visited the zoo".*

Researcher: *"What have you done to see that learners have learned"?*





Ms Lebo: *“Well... the intelligent learners still remembered what they saw at the zoo unlike slow learners, that showed me that learning took place”*. (Post-trip interview, School E, 21 August 2019)

#### **4.4 The influence of a visit to the National Zoological Gardens in learners’ attitudes towards learning science**

This section explores the last sub-question: *How do the National Zoological Gardens influence the learners’ attitudes towards learning science?* I have explored this question by focusing on learners’ responses towards animals, learners’ interactions and learners’ interest at the zoological gardens.

##### **4.4.1 Learners’ responses towards animals at the zoological garden**

The learners from schools A, B, C, D, and G used affectionate words towards the animals such as ‘love’, ‘like’, ‘kind’ or even ‘beautiful’ when mentioning animals during post-interviews. Some responses of these learners were:

Researcher: *“How was the visit to the zoo?”*

Learner A: *“...I loved animals because some animals protect us. It was very nice to see animals at the zoo. Animals such as dogs protect us, but there are no dogs at the zoo. Most animals at the zoo are dangerous, but it was still nice to learn about them”*.

Learner C: *“It was nice to go to the zoo. Monkeys were funny and acting funny. I was happy when I saw monkeys jumping around”*.

(Post-interview, school A, 20 May 2019)

Learner F: *“...I felt happy to see animals at the zoo because most animals are kind and they will not hurt you if you do not hurt them. I have learnt that snakes are more afraid of us as we are afraid of them and not all snakes are poisonous”*.

Learner J: *“My trip was good. Animals at the zoo were really beautiful. I want to go back soon”*.

(Post-interview, school B, 6 June 2019)

Learner N: *“... I enjoyed seeing my favourite animal which is a tiger. Although tigers are dangerous, they are still beautiful”*.



Learner L: *"I was happy to see animals because most of at the time they do not fight like people".*

Learner O: *"I loved the zoo. I was happy when we were watching gorillas, they were coming near the glass and that was nice".*

(Post-interview, school C, 20 May 2019)

Learner Q: *"The visit was fun. I love the animals and they amazed me".*

Learner R: *"...I was very excited when I saw animals at the zoo. It is a good feeling to see animals live compared to seeing them on TV or in textbooks. Seeing gorillas was more exciting because they are similar to human beings although they are more ugly compared to us".*

(Post-interview, school D, 16 August 2019)

During the zoological garden's visits, I observed learners making comments about animals based on their characteristics, appearances, behaviours and habitats (learners from all the schools). Some of the learners' conversations during the zoological gardens visits are shown below (Paraphrased field notes written during the zoological gardens visits and are not direct quotes, some learners in all schools):

Lions are very attractive animals, their beard, face and body features are very appealing. It is just sad that there are situated very far and we cannot see them properly. But I am glad that they are far because I would not want to be the meat for the lions.

Monkeys look like caring and kind animals. It is amazing and fun to see monkeys share a banana, only one banana and they are sharing. It must be because those monkeys are related or close friends to share.

These animals are smart, they can jump from one tree to another without falling (Referring to vervet monkeys).

A cheetah is the fastest animal according to our teacher, but seeing the fastest animal sleeping until we leave is concerning. Maybe this animal is sick and the people at the zoo have not seen it yet.

I feel very happy seeing animals at the zoo especially monkeys. But seeing snakes have scared me. I hope at night I do not dream about that big yellow snake touching me. Some snakes are crooks because they can hide behind soil and water.

Fish are such amazing animals; it is like they have nothing to worry about.



Furthermore, I observed most learners interacting with the animals, attempting to infer some animals' state of mind or openly making a comparison between animals' appearance or behaviour with that of human beings. A gorilla was the most common animal learners compared to human beings. Some learners had put themselves in the situation of the animals or made behavioural connections between themselves and the animals. This observation was clear during learners' conversations at the zoological gardens, some discussions are shown below (Paraphrased field notes written during the zoological gardens visits and are not direct quotes, some learners in all schools):

I liked the way lions moves. It is like the lion it's full of herself or himself. That lion shakes its body like some of my friends when they want to get boys attention in class.

I wonder what will happen if we imitate the sounds and behaviour of this animal? (Referring to gorillas). The learners made different predictions such as; the animal will imitate them; the animal will run away and that the animal will run away since it is like human beings.

Some of the learners were calling out animals' names hoping that these animals will give them a certain reaction.

These animals look like us, I wonder why they are hiding behind the rocks. But it makes sense because some people are shy

#### 4.4.2 Learners' interactions at the zoological gardens

The learners from schools A, B, C, D, E and G stated that they were interacting socially during their visits to the zoological gardens. During post-interviews, they stated in their responses that they were observing animals in groups at the zoological gardens, they were talking to their friends during the observations and they were discussing different types of animals. Some of the learners' responses are stated below:

Learner FF: *"I enjoyed seeing a gorilla with my friends at the zoo. Some of my friends said a gorilla looks similar to us people. I agreed with my friends but a gorilla is ugly and people we are not ugly like a gorilla. My friends agreed with me".*

Learner JJ: *"I liked looking at the animals with my friends and teachers at the zoo. It was funny and exciting to look at the monkeys because they were making interesting*



*sounds and movements. I and my friends were laughing and also scared when the monkeys came near the fence”.*

(Post-interview, school G, 22 August 2019)

Learner B: *“When we were walking around the zoo, my friends were showing me animals which we did not know and our teacher from the zoo did not teach us about those animals. My friends and I were guessing the names of these animals, but our school teachers helped us with the names”.*

(Post-interview, school A, 20 May 2019)

Learner J: *“I enjoyed viewing snakes in their glasses with my group. There were different snakes and some of my group members were scared. I wanted to touch the snakes, especially the big yellow one with white lines”.*

(Post-interview, school B, 16 August 2019)

Learner M: *“I and my friends did not know or remember most animals except monkeys, lions and snakes. But we were scared of most animals”*

(Post-interview, school C, 6 June 2019)

During the zoological gardens visits, I observed a social interaction between learners in all schools. Learners were talking and sharing ideas among each other. The learners were discussing the colours of snakes and pointing to the type of snakes which they believed were poisonous. They were also calling their peers’ names to come and observe the snakes they found fascinating.

I observed learners from school A observing animals in groups and they were making conversations among themselves. The learners were sharing information about animals’ names, shapes and sizes and they were also expressing to their peers how they know a particular animal. Some of the school A learners’ conversations were as follows (Paraphrased field notes written during the zoological gardens visit and are not direct quotes, school A learners):



Can you tell me what is the name of that animal (Learner speaking to a friend referring to flamingos)

Which monkey do you think is the mother among all of these monkeys? I think we should look at the monkeys' size, the big one should be the mother.

From the animals we have seen, which animal could you say has a nice body and why.

I have further observed learners from school B reminding each other about the characteristics of reptiles during the lecture presented by the zoological gardens educators. The zoological gardens educators allowed the learners to have discussions during the lecture. During the observation of monkeys, school B learners were discussing the shapes and sizes of the monkeys and they were running around where the monkeys were kept captive to view them in different positions. Furthermore, I have observed learners from schools C and D comparing notes during their observations. Some of the conversations were as follows (Paraphrased field notes written during the zoological gardens visits and are not direct quotes, school C & D learners):

Learners from school D:

Can you ask the zoo teacher for me to repeat the differences between a cheetah and a leopard I did not get that? The other learner responded by saying, I will tell you after the class.

Do you believe that lions eat only meat? (one learner asking a friend near her).

Learners from school C:

I think that this snake is not poisonous, (the other learner responded and said), because the snake is small does not mean it is not dangerous.

This animal looks dirty, I wonder If they bath them. (referring to an elephant).

Learners from schools F and G were running around during the observations, reading the information boards, calling their teachers to come to observe with them and asking their teachers to take photos of the monkeys for them since they were not allowed to bring phones. I observed that when learners were approaching a specific animal exhibit, they would shout and call that animal's name many times with laughter until they could see the animal.



#### 4.4.3 Learners' interest at the zoological gardens

The learners from schools C, D, E and G showed interest in the animals' sound, body covering and nutrition during the zoological gardens visits. Some of the learners' responses were as follow:

Learner W: *"We did not see a lion clearly because it was far from us. I was wondering about the type of sounds lions make when they see human beings. But I was sad that I could not hear anything since lions were far"*.

(Post-interview, school E, 21 August 2019)

Learner T: *"Our zoo teacher taught us that reptiles are animals that are covered with scales. But I was wondering how these animals came to have scales and not skin with hair like us, our zoo teacher did not explain this to us"*.

(Post-interview, school D, 16 August 2019)

Learner O: *"I have always wondered what makes animals eat what they eat. Why some animals eat meat, while others eat grass like a giraffe. And I also wonder where this grass come from"*.

(Post-interview, school C, 6 June 2019)

I observed learners showing interest about primates, iconic mammals that are revered generally but especially in African culture. Some of the learners were interested in animals' behaviour, intelligence, communication, and habitats (Field notes, School C, E & G). Some of the learners' conversations during the zoological gardens visits are shown below (Paraphrased field notes written during the zoological gardens visits and are not direct quotes):

These animals are smart, they can jump from one tree to another without falling (Referring to vervet monkeys). I wonder what makes them smart compared to other animals? I have always wondered what type of feet and hands they have that allow them to be able to jump like this?

I have always wondered how animals such as snakes and monkeys came into being. What makes these animals angry, how do you see that they are angry and why they are different.

I was wondering how this animal can be born with such a tall neck (Referring to a giraffe).





Additionally, they were some learners who showed interest in animals' actions, characteristics and habitats (Field notes, School B & C). Some of the learners' conversations during the zoological gardens visits are shown below (Paraphrased field notes and are not direct quotes):

Why are lions situated so far, not only from us learners but from other animals as well? And surprisingly, lions are just sitting and staring at us, while other animals such as monkeys are moving and jumping around.

Seeing a cheetah makes me wonder why a cheetah being the fastest animal is just sitting, this animal is not making any movements or even looking at us.

A leopard is sleeping and I am interested more about it since our teacher taught us about it before. I want to see if I can spot the characteristics and behaviour I learned such as its body features, the colour of eyes, see if it could climb a tree and hear its sounds.

Some learners had interest in general science knowledge during their zoological gardens visits (schools A, B, D & F). This was evident during their conversations at the zoological gardens. I have observed common conversations in most learners (boys & girls) during their observations. An animal that most learners showed interest in during their observations was a lion. (Paraphrased field notes written during the zoological gardens visits and are not direct quotes):

I think it is cool and interesting how lions are situated far from our viewpoint and I want to understand the reasons why lions are not near to our viewpoints such as elephants and giraffes.

Are lions carnivores, I do not see any meat near them besides small and big rocks. And lions look really cool, I wonder what makes them dangerous. They look fresh and beautiful, why would such an animal be dangerous.

I wonder if animals know their names. If we called out every animal with their names, I wonder if we will have that animal's attention. (Learners called animals with their names as they approach them. These learners called animals such as crocodiles, zebra, elephants and monkeys using their home languages).



## 4.5 Conclusion

This chapter presented the data that was collected from seven schools visiting the zoological gardens through interviews, observations and drawings. The purpose of chapter 4 was to present data on the perceptions of learners' learning at the zoological gardens and the influence of the zoological gardens on learners' learning science. Suggestions from the data are that learners' expectations of the learning experience at the zoological gardens revealed the way they perceive learning at the zoological gardens. The data also suggested that the influence of learning science at the zoological garden was indicated through learners' descriptions of the knowledge learned, learners' responses towards animals, learners' interactions and learners' interest at the zoological gardens. The next chapter presents the discussions of the findings of this study.





## CHAPTER FIVE: DISCUSSION OF FINDINGS AND RECOMMENDATIONS

*Nothing is impossible. The word itself says "I am Possible"*

*-Audrey Hepburn*

### 5.1 Introduction

In the previous chapter, I have presented data on learners' perceptions of learning science at the zoological gardens. I have examined the influence of learners' learning science at the zoological gardens and the influence that the zoological gardens had on learners' attitudes towards learning science. In this chapter, I present the discussion of the main findings and the recommendations. The findings are described and interpreted against the literature and the conceptual framework that has framed this study to enrich the thesis in terms of comprehensiveness.

### 5.2 Overview of the findings

A summary of the main findings of how learners perceive learning science at the zoological gardens and the influence of learning at the zoological gardens is presented in Table 5.1 below. This overview gives a holistic picture of the findings of this study. Table 5.1 is demonstrated below:

**Table 5.1: Summary: Learners' perceptions of learning science at the zoological gardens and the influence of the zoological gardens on learners' learning science**

Research Questions	Findings
<b>Sub-question 1:</b> How do learners perceive learning science in the National Zoological Gardens?	Learners perceived the zoological gardens as an environment for learning.
	Learners perceived the zoological gardens as an enjoyable and motivating experience.
<b>Sub-question 2:</b> How does the visit to the National Zoological Gardens influence learners' learning science?	The visit to the zoological gardens improved learners' knowledge of wild animals.
	The visit to the zoological gardens improved learners' observational skills.
<b>Sub-question 3:</b> How does the visit to the National Zoological Gardens influence learners' learning science?	Elicit learners' positive emotions towards animals.
	Learners were personally motivated to learn.



attitudes towards learning science?	
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In the section below, I discuss the findings of this study by answering the secondary research questions I posed in chapter 1. I also highlight the recommendations to the research questions.

### 5.3 Findings and recommendations to the research questions

#### 5.3.1 Secondary Research Question 1

How do learners perceive learning science in the National Zoological Gardens?

##### 5.3.1.1 Findings

*a. Learners perceived the zoological gardens as an environment for learning*

A similar finding was reported by Kelly, Ocular and Austin (2020), and Rowe and Kisiel (2012) who state that learners often come to informal learning environments for learning. This finding was evident when learners were able to describe the learning experience they were expecting, and their comments suggested that they were expecting to learn about husbandry practices, animal welfare, biology, and the safety of animals.

While the researcher agrees that learners go to informal learning environments with a perception of learning, she concurs that a factor such as a lack of clear learning objectives for a visit may negatively influence learners' maximum learning of science during their visits. Clear learning objectives should conform with the content of the curriculum, meaning the prepared learning objectives for the zoological gardens visits should link the content of the curriculum studied in the classroom (Alturki & Aldraiweesh, 2022; Coll & Coll, 2018; Bozdogan, 2008). In this current study, it was evident that the majority of the learners lacked clear learning objectives for their zoological gardens' visits. According to Ramirez II et al., (2022) and DeWitt and Storksdieck (2008), when learners understand their learning objectives for a field trip, then a visit to an informal learning environment becomes beneficial for learning science.



Additionally, this finding builds on existing evidence by Kelly et al., (2020), Rowe and Kisiel (2012) and Packer (2006) in that learners are intentionally pursuing learning even in the absence of prescribed learning objectives, they experience learning. Moreover, informal learning environments expose learners to science and thinking scientifically, hence they might perceive it as an environment for learning (Kelly et al., 2020; Rowe & Kisiel, 2012). The researcher is of the view that due to learners' lack of clear learning objectives for their visits, most of them were not fully prepared to learn science and could not connect the zoological gardens learning with the content prescribed in the South African science curriculum. This finding should be taken into account when considering the South African science curriculum mandate of educating learners on how informal learning environments connect to their classroom learning.

*b. Learners perceived the zoological gardens as an enjoyable and motivating experience*

Packer and Ballantyne (2010) and Packer (2006) describe that when learners are brought into an environment with no particular learning objectives, the learning experience they are drawn into can be both enjoyable and productive. Consistent with the findings by Packer and Ballantyne (2010) and Packer (2006), the findings of this study showed that learners perceived the zoological gardens experience as enjoyable and motivating. Learning as fun can be described as a learning experience in which learners enjoy and appreciate learning (Parker, 2006). The importance of learning as fun relies on an observation that "visitors who have no particular learning agenda can be drawn into a learning experience that is both enjoyable and productive" (Ching-Huei et al., 2022; Packer & Ballantyne, 2010 :27).

The researcher is of the view that due to learners' lack of clear learning objectives for their visits, the perception of the zoological gardens as enjoyable might not add value to their science learning. Learners were not fully prepared to use the enjoyable experience in their science learning, and this creates a gap between informal learning and classroom learning. This implies that learning in a valuable environment such as an informal learning environment is not fully utilised.

It was revealed from the data that learners expect to learn while they are enjoying themselves when visiting informal learning environments. However, the data showed



a gap that most learners were unable to link science classroom learning with learning in informal environments such as the zoological gardens. Having been a South African primary school teacher for over 7 years, every year our learners were taken to informal learning environments and mostly to zoological gardens. According to NZG (2021) and Mkhize (2020), about 600,000 people visited the zoological gardens, -mainly primary school learners. This finding shows that this is a wasted opportunity. Informal learning environments are not fully applied for educational purposes that support science classroom learning.

### 5.3.1.2 Recommendations

The following are the recommendations based on the first secondary question:

- ✚ Firstly, learners should be provided with an opportunity to prepare educationally for their scientific field trips.
- ✚ Learners should be assisted by their teachers to prepare educationally for their scientific field trips.
- ✚ Learners' preparations should link the content prescribed in the South African science curriculum with learning in informal environments.
- ✚ Learners' perception of learning in an informal environment as enjoyable should be utilised to maximise their science learning in the classroom.
- ✚ Teachers should involve their learners when preparing educationally for a scientific field trip.
- ✚ Lastly, the schools' heads of departments (HoD) should request to review teachers' educational preparations before a scientific field trip, and they should also support teachers in their preparations.

### 5.3.2 Secondary Research Question 2

How does the visit to the National Zoological Gardens influence learners' learning science?

#### 5.3.2.1 Findings

a. *The visit to the zoological gardens improved learners' knowledge of wild animals*



In line with the findings by Torkar and Mavric (2016) and Patrick et al., (2013), the findings in this study showed that learners' knowledge of wild animals was improved after the zoological gardens visits. Even though learners' knowledge of wild animals may not insinuate that they have an understanding of those animals, it can frame an ability to evaluate learners' knowledge and incorporate it with new knowledge gained after a visit to zoological gardens. Learners at the age of 5 to 10 should be able to state and differentiate organisms, their habitat and their basic characteristics (Patrick & Tunnicliffe, 2011). The South African curriculum for Natural Science and Technology for Grade 4-6 under the strand "life and living" requires learners from Grade 4 (Age 9-10) to already know different types of organisms, their characteristics and their habitats (Department of Basic Education, 2011).

In the view of the researcher, this finding should be considered because even though learners in this study improved their knowledge of wild animals, South African learners are still lagging in science knowledge when compared to developed countries. Patrick and Tunnicliffe (2011) state in their study that, primary school learners in developed countries such as the UK at an early age as 4 years can accurately distinguish between domestic and wild animals. Learners in developed countries have adequate opportunities to learn about wild animals, not only by visiting the zoological gardens but by watching documentaries and reading books (Patrick & Tunnicliffe, 2011). In contrast to developed countries, the researcher believes that there may not be a culture in South Africa of primary school learners frequently watching documentaries and reading.

In addition, this finding contradicts the claims made by Torkar and Mavric (2016) that, learners in Africa have more knowledge about different types of wild animals compared to other continents. This was not the case in this study specifically before the visits to the zoological gardens. Some learners lacked knowledge and understanding of the types of animals found at the zoological gardens. According to Patrick et al., (2013), learners' lack of knowledge may negatively impact them from gaining a broader understanding of the functioning of zoological gardens and the characteristics of the wild animals. The researcher is of a view that learners' lack of knowledge may be due to the environment in which they grow up. The learners in this



study were not situated in urban areas. These learners are not likely to have an opportunity to visit environments where wild animals are present. They are likely limited to living and learning in a township, with no exposure to nature and nature reserves, despite South Africa's rich heritage.

*b. The visit to the zoological gardens improved learners' observational skills*

This finding is aligned with studies by Caine et al., (2012), Tranter and Malone (2004) and Reiss and Tunnicliffe (2001) in that the drawings showed an enhancement of knowledge and understanding of animals in learners after visiting an informal learning environment. Earlier studies have reported that drawings are a good and useful assessment tool to assess learning that occurs in the informal environments, tests and questions do not certainly expose the learning that occurs in the informal setting (Caine et al., 2012; Brooks, 2009; Bowker, 2007).

In the South African science curriculum, there are three broad specific aims that relate to the purpose of learning science (Department of Basic Education, 2011). Specific aim 2 requires learners to be able to investigate and create solutions. For learners to achieve this aim, one of the skills learners need to acquire is being able to make observations (Department of Basic Education, 2011). According to Nabors et al., (2009), informal learning environments could improve and develop learners' observation skills. When learners' observations skills are enhanced, they "develop a positive attitude for learning science and are motivated to develop connections between theoretical concepts in the classroom and what has been experienced outside the classroom" (Baruzzi, 2022; Nabors et al., 2009: 664).

This finding should be taken into account considering that the South African science curriculum and CAPS document for Grade 4-6 NST require learners to be able to investigate, create solutions and make observations. Therefore, to provide learners with skills needed in the 21<sup>st</sup> century such as observations, informal learning environments should be utilised optimally. Furthermore, skills such as observation and analysing skills are necessary for scientific inquiry (Griffin, 1998).

### **5.3.2.2 Recommendations**

The following are the recommendations based on the second secondary question:



- ✚ Schools are encouraged to visit the National Zoological Gardens for their learners to improve their knowledge of animal species and also gain skills needed in the 21<sup>st</sup> century.
- ✚ Learners' interests in the types of animals from Africa and elsewhere in the world should be taken into consideration when preparing a scientific field trip.
- ✚ Learners should be provided with a variety of opportunities to learn about wild animals besides visiting the zoological gardens.

### 5.3.3 Secondary Research Question 3

How does the visit to the National Zoological Gardens influence learners' attitudes towards learning science?

#### 5.3.3.1 Findings

*a. The visits to the zoological gardens elicited learners' positive emotions towards animals*

Luebke, Watters, Packer, Miller, and Powell (2016), Clayton, Fraser and Burgess (2011), Clayton, Fraser and Saunders (2009) and Mayer and Frantz (2004) also reported a similar finding. The majority of the learners experienced more positive emotions in the zoological gardens when an animal was active. According to Packer and Ballantyne (2010:31), learners may "identify with the animals' struggle, feel some kind of connection to the animals and develop an appreciation of animals" when they visit zoological gardens. When learners have positive emotions towards the animals, that motivates a force of learning because it influences what learners consider to be important. Positive emotions towards nature and the animals also have the ability to increase attention and willingness to learn science (Powell & Bullock, 2014).

Furthermore, when learners imbue the imagined or real behaviour of animals with "humanlike characteristics, motivation, intentions and emotions is the essence of anthropomorphism" (Epley, Waytz & Cacioppo, 2007: 864-865). Young children are more likely to anthropomorphise when "anthropocentric knowledge is accessible, applicable and when motivated to be effective social agents" (Epley et al., 2007:864). The researcher argues that, while learners might have been empowered to care for the animals, like animals, or have a positive attitude towards the animals which is





important in conservation and environmental education, however, this was a misused learning opportunity since most learners had no clear learning objectives planned for the visits.

An emotional connection between learners and animals was evident when many were relating to the animals and some were trying to infer animals' state of mind. The majority of the learners were using the gorillas' appearance to tease each other. This finding is in line with Luebke et al., (2016), Watters, Miller and Sullivan (2011) and Moss and Esson (2010) findings which report about the natural environment such as zoological gardens eliciting an emotional connection between a visitor and the animals. In the researcher's opinion, learners' emotional connection with the animals was poor since it was not linked with their prescribed science classroom learning due to a lack of clear learning objectives. Therefore, it has resulted in a connection with animals that might be temporary and also superficial. Furthermore, a connection that lacked details and nuanced understanding of the animals and their environment and lacking understanding of the plight of the gorilla. An animal such as a gorilla is only seen as a curiosity or caricature, and not as a being worthy of protection. It has become a spectacle, not an intelligent animal capable of sophisticated cognition. This finding build on existing evidence that there is still an association between black people and gorillas. This black-gorilla association perception increases an endorsement of violence against black people (Goff, Eberhardt, Williams & Jackson, 2008). It is therefore important that learners are educated about this association.

The researcher argues that, since the connection becomes superficial, these animals become a little picture on a cell phone that is looked at once and never again. These findings are important because as an outcome, this impacts negatively on ensuring that future generations help protect wildlife.

*b. Learners were personally motivated to learn*

Learning in an informal learning environment such as the zoological gardens is personal. Learners' learning is self-directed, learners may not have control over what their teacher teach them at the zoological gardens, but always have control over what is learned (Chatti, Agustiawan, Jarke & Specht, 2010). Even if a visit to the zoological gardens can be guided, it still allows a variety of activities to choose from. The learners





still have control over what is more important to learn and they control their exploration (Bamberger & Tal, 2006).

This finding resonated well with the reports by Tal (2012), Eshach (2007) and Bamberger and Tal (2006) who found that learners come to informal learning environments carrying personal history and this motivates learning. In this current study, learners' motivation to learn was stimulated by socialisation and communication at the zoological gardens and learners' curiosity. According to Choi, Choe and Kim (2020), learners' communication during zoological gardens visit has been shown to be important for science learning, when learners communicate they "generate scientific knowledge". In addition, social interactions at the zoological gardens allows learners to make sense of the world and intellectual improvement occurs (Stephenson, 2009). When learners work in a group, that fosters 21<sup>st</sup>-century skills such as effective communication skills, social skills and being able to work with others towards a common goal.

The researcher asserts that, unfortunately, primary school learners in this current study displayed little knowledge of the learning opportunities that the zoological gardens presents. Furthermore, learners did not have educational goals for the visits, and they were unable to connect the experience with the science classroom curriculum. Therefore, even though learners were personally motivated to learn at zoological gardens, their learning became limited and shallow.

### **5.3.3.2 Recommendations**

The following are the recommendations based on the last secondary question:

- ✚ Black learners should be educated about the perception of blacks-apes association so that they do not tease each other about it.
- ✚ More intervention studies where cognitive and affective development outcomes of a visit to informal learning environments are examined.

### **5.3.4 Teachers' influence**

To have an in-depth understanding of learners' perceptions of learning science in the zoological gardens, this study considered teachers to be important. Therefore,



teachers were interviewed before and after the zoological garden's visits. Additionally, they were observed during their zoological garden's visits.

#### **5.3.4.1 Findings**

##### *a. Teachers influenced learners' perceptions of learning science in the zoological gardens*

The findings of this study highlighted that learners' perceptions of learning science at a zoological garden were influenced by their teachers' lack of educational preparations for the visits. This finding is in line with Coll et al., (2018) and Mwapwele and Roodt (2018) who state that careful preparations of any field trip can assist to focus a visit for learners' learning. The study also reported that, although teachers could identify the zoological gardens as important for their learners' learning science, they were unable to connect educational preparations from their side as an influence on their learners' perceptions of learning science at the zoological gardens.

Earlier studies by Guisasola et al., (2009), DeWitt and Storksdieck (2008), and Bozdogan (2008) reported that educational preparations for a field trip make a difference in learners' understanding of a field trip purpose on learning science, and a visit should be prepared in a manner that will support the science classroom curriculum. The researcher in this study argues that maybe teachers did not consider it to be their responsibility to reinforce their learners' science learning during the zoological garden's visits. Another reason for teachers' lack of educational preparation might be due to spending most of their time dealing with the logistics of the trips such as organising transports for their learners and choosing a suitable date for the zoological garden's visits. Therefore, the researcher concludes that teachers view a field trip visit as time off from formal learning.

The researcher is of the view that due to teachers' lack of educational preparations, most learners were not prepared to learn science at the zoological gardens and were not taught how to link the zoological gardens experience with the content prescribed in the South African science curriculum. This implies that teachers do not prioritise the mandate of the zoological gardens to educate learners on how the zoological gardens links to their classroom learning. It also means that teachers do not know what is



expected from them when visiting zoological gardens. This finding shows a gap in teachers' knowledge that pertain to their role at the zoological gardens.

Research by Coll et al., (2018), Behrendt and Franklin (2014) and Davidson et al., (2010) allude to the fact that to maximize learners' learning experience in informal learning environments such as zoological gardens, teachers need to understand that this requires proper planning accompanied with follow-up activities. The findings of this study illustrated that, while a few teachers prepared follow-up activities, the majority of the teachers failed to prepare follow-up activities for their learners, thus impacting negatively on the education of their learners. This finding could be due to the teachers' perceptions of informal learning environments.

#### **5.3.4.2 Recommendations**

The following are the recommendations based on teachers' influence:

- ✚ Firstly, teachers should prepare educationally for their learners' scientific field trips.
- ✚ Teachers should plan preparatory activities and follow-up activities for their learners' zoological gardens visits.
- ✚ Teachers should be provided with support, training and workshops on planning educational field trips.
- ✚ Teachers' educational preparation should be guided by the purposes of the South African science curriculum on the type of science learners they aim to produce.
- ✚ Lastly, more studies are required on informal learning environments where teachers are supported and trained on planning educationally thoroughly for a scientific field trip.

#### **5.4 Situating the findings within the study's conceptual framework**

The conceptual framework of this study was based on Learning Outside the Classroom (LOtC) as discussed in chapter 2. I accepted the explanation that Learning Outside the Classroom can influence learners emotionally, socially, physically, cognitively and personally, as I believed that informal learning environments such as



zoological gardens involve a “whole-body, whole-brain and whole-experience activity” (Falk & Dierking, 2002: 10).

Corresponding with the study’s conceptual framework about the cognitive domain, the zoological gardens provided learners with meaningful cognitive experience. This experience was clear with the findings from the second sub-question. The findings showed that learners improved their knowledge of wild animals and their observational skills were improved. According to Oakley (2004), cognitive development cannot be seen, but you can infer from behaviour and improved knowledge. However, for learners to experience maximum cognitive improvement at a field trip, this is influenced by teachers planning learning objectives, pre-trip activities and post-trip activities (Coll et al., 2018; Davidson et al., 2010; Guisasola et al., 2009). For the majority of the participants, this was not the case in this current study.

Learners’ interest to learn can be stimulated through the communication of expectation, direct instructions or socialisation with others (Choi & Jacobs, 2011). In this current study, learners were interested to socialise with their peers. The social interaction involved “allowing learners to be in groups with their peers and focuses on having learners discuss what they saw, learned or enjoyed” (Davidson et al., 2010:138). This corresponded with the study’s conceptual framework about a social domain. The social domain linked with the findings from the first sub-question. This domain is concerned with learners’ interactions in informal environments, and this was shown in the findings.

The findings showed that the zoological gardens elicited learners’ positive emotions towards animals. This corresponded with the study’s conceptual framework about an emotional domain. According to Powell and Bullock (2014), girls have a stronger positive emotional response compared to boys towards the animals. In this current study, all the learners had stronger positive emotions towards the animals and learning during their zoological garden’s visits. The emotional domain linked to the findings from the third sub-question.

Furthermore, there was a link between the findings and the study’s conceptual framework about a personal domain. In a personal context perception, learners’ learning is influenced by; motivation to learn, expectation, prior knowledge, interests,



beliefs, choice and control (Eshach, 2007; Bamberger & Tal, 2006). In addition, personal context characterises the personal history that a learner carries with him/her into the learning situation. The findings showed learners were personally motivated to learn and showed curiosity in learning about animals' behaviours, habitats, sounds and nutrition.

## **5.5 Conclusion**

This chapter discussed the findings where the impact of informal learning environments was outlined. The sub-questions were presented together with the recommendations based on the research questions, findings were interpreted against the literature that guided this study. Following from the literature of informal learning environments, the next chapter concludes and proposes a model that shows the influence of learners' perceptions of learning science in informal learning environments such as the zoological gardens in South Africa.



## CHAPTER SIX: CONCLUSIONS

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*“Education is the passport to the future, for tomorrow  
belongs to those who prepare for it today”  
-Malcolm X*

### 6.1 Introduction

In the previous chapter, I outlined the findings of this study and interpreted them in contrast to the literature review that guided this study. The previous chapter leads to the development of the model that is presented in this chapter. Furthermore, I present the implications for practice and the limitations of the study. Recommendations for future research are also outlined.

### 6.2 Proposed model of factors that influence outdoor learning and its potential outcomes

The study proposed a model of factors that influence outdoor learning and its potential outcomes. The model considered literature on informal learning environments, however, it also added additional information based on this study’s findings. This model does not explain everything on learning science outside the classroom and can further be modified to make it more relevant to the learners’ Grade. The model attempts to close a gap in South African literature pertaining to the factors that influence learners’ learning science in informal learning environments such as the National Zoological gardens (Kelly et al., 2020; Kisiel, 2010).

This study recognises that learners’ perceptions of learning science in informal learning environments are influenced by two main factors namely, educational planning and creating an enjoyable and motivating experience that is controlled. Educational planning for learning in informal environments is discussed in literature; however, it is not addressed in the context of influencing learners’ perceptions. In addition, it is not argued in literature that factors such as enjoyable and motivating influences learners’ perceiving learning in informal environments. Furthermore, literature does not address the influence of partnership in learners’ learning in informal environments. The components of the model are discussed below:



### *Educational planning (Component 1)*

This study acknowledges that educational planning for a visit to an informal learning environment is very important. Educational planning is intended to be a joint effort between the Department of Education (DBE), schools, teachers and the educational staff in informal learning environments in order for learners to experience effective learning. The findings in this study showed no evidence of cooperation that existed between teachers, schools, DBE and educational staff at the zoological gardens.

Educational planning for an informal learning environment should occur in the following:

- Teachers being involved in decisions pertaining to choosing an informal learning environment for their schools to visit. According to Behrendt and Franklin (2014) and Lohman (2000), teachers are mostly not involved in decision making concerning choosing an informal learning environment for their schools.
- Teachers should prepare pre-activities with a specific learning objective/s in mind that links the content of the curriculum studied in the classroom and the content to be explored in an informal learning environment. This study showed that teachers should communicate their planned objectives to their learners, this will enable learners to understand how the field trip links to their classroom learning.
- The study supports the views by Coll and Coll (2018), Davidson et al., (2010) and Bozdogan (2008) that teachers should visit the facility before their learners' official visit. Visiting the facility will enable teachers to collaborate with the educational staff in an informal learning environment.
- Teachers should prepare post-activities that link the visit with the curriculum studied in the classroom.

### *Creating an enjoyable and motivating experience that is controlled (Component 2)*

Literature and findings in this study show that learners enjoy themselves and they are motivated when they visit informal learning environments (Packer & Ballantyne, 2010; Packer, 2006). However, this study findings show that learners' excitement needs to



be controlled in order for learning to take place. This study suggests that it should be the responsibility of a teacher and the educational staff in informal learning environments who control learners' excitement. Learners' excitement can be controlled by adhering to the following:

- Teachers plan for the visits and form a team with the educational staff in informal learning environments.
- Learners should be allowed to group themselves. According to Davidson et al., (2010), learning can be enhanced when learners are allowed to be grouped with their friends. In this current study, learners were grouped by their teachers or the educational staff at the zoological gardens and this limited the conversations during their observations.
- Learners' discussions should be focused by giving them worksheets during their observations. This study proposes that it should be a responsibility of a teacher in collaboration with educational staff in informal learning environments to design worksheets.

In the background of this study pertaining to the two key factors that influence learners' perceptions of learning science in informal learning environments, the model shows that there will be four potential outcomes that will benefit learning, namely:

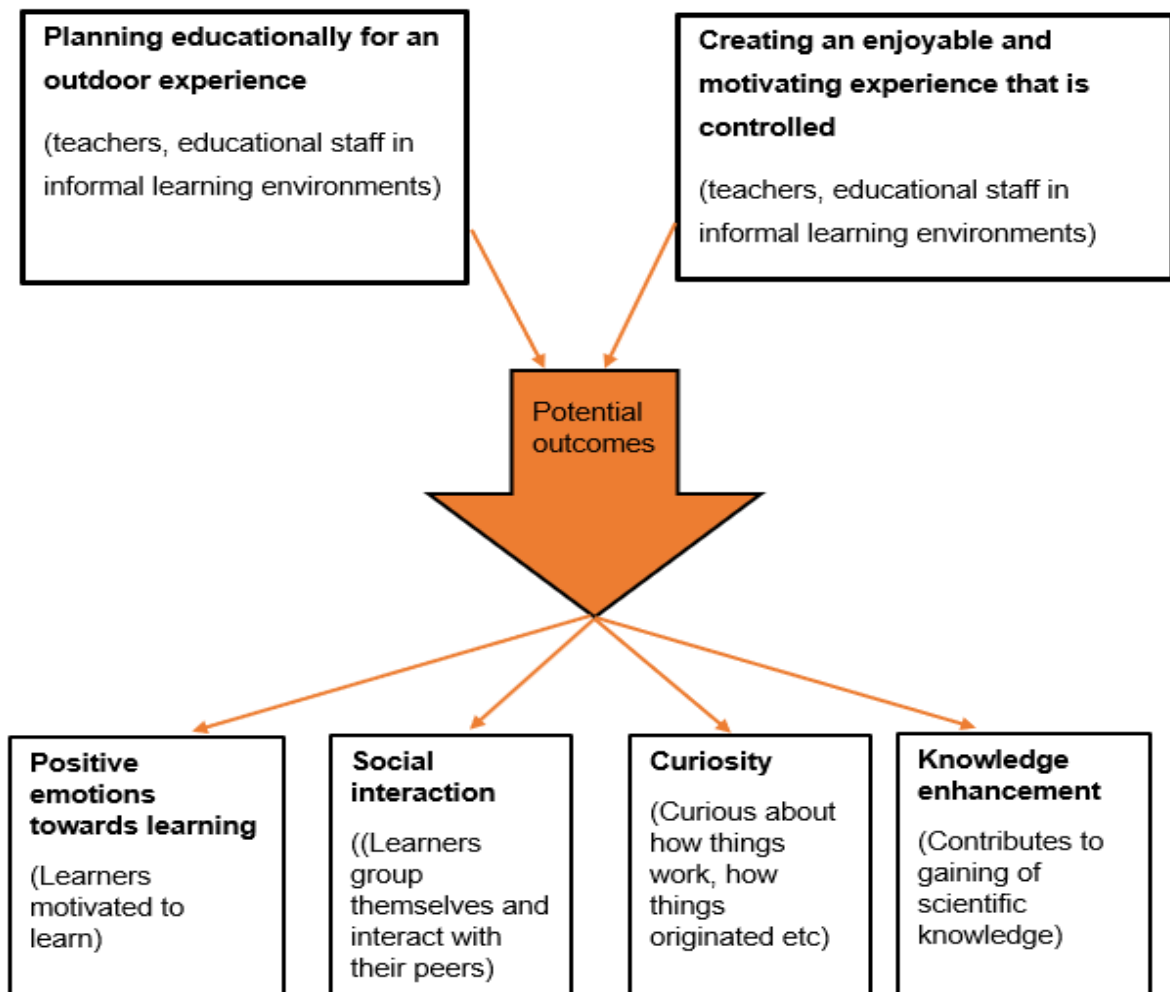
- Positive emotions towards learning
- Social interaction
- Curiosity
- Knowledge enhancement.

This model has demonstrated the importance for curriculum designer to investigate the content in the curriculum that emphasizes the benefits of learning in informal environments. As discussed earlier in the study, teachers are important assets, therefore, teachers should be involved in decision making with regards to planning educational field trips for learners and planning the curriculum that will be enjoyable for their learners. This model has shown that teachers should prepare for learners who prefer to learn while enjoying themselves. Additionally, learners link enjoyment with technology, hence most of the learners in this study were using their phones during



observations. In this current century, we are dealing with learners who enjoy technology; therefore, teachers should prepare for such learners.

The proposed model is demonstrated in figure 6.1 below.



**Figure 6.1:** The influence of outdoor learning and possible outcome model (This study)

### 6.3 Implications for practice

The findings of this study have some implications for practice amongst institutions in particular schools, DBE, National Zoological Gardens, and teachers.

#### 6.3.1 Implications for government policymakers

The South African Curriculum and Assessment Policy Statement (CAPS) for Science in Grade 4-6 states that learners should be able to “do science” by doing investigations



and examining small animals while caring for them (Department of Basic Education, 2011). However, it does not encourage or enforce teachers to take learners to informal learning environments when doing science.

Since informal learning environments such as zoological gardens are beneficial for learners' learning and doing science, the South African government policymakers may include informal learning environments in the science curriculum. This inclusion will encourage science teachers to prepare for the field trips educationally. Additionally, when informal learning environments are included as part of the science curriculum, it will give science teachers allocated time to prepare for their learners and the scientific field trips will be valuable for learning science. However, with the current policies, there is no guidance that is given to teachers regarding educational preparations when visiting informal learning environments. As a result, teachers are not getting any support from the Department of Education in order to provide learners with an effective learning experience. Therefore, the Department of Education is complicit in the colossal waste of a learning opportunity and money. This study can conclude that the South African curriculum needs an intervention in regard to the science curriculum. Thus, visiting informal learning environments should not be made mandatory to schools until there is a policy in place that will guide teachers and support them.

### **6.3.2 Implications for schools**

In terms of the South African Schools Act 84 of 1996, schools have been given the authority to choose informal learning environments they prefer their learners to visit. Schools' principals and school governing bodies (SGB) are given the authority to approve and authorize schools' excursions (South African Schools Act 84, 1996). Due to the school's management given the powers to grant and permit schools' excursions, this limit teachers' inputs regarding selecting an informal learning environment for their learners (Lohman, 2000; this study). Therefore, the power of choosing an educational field trip should be given to the teachers. The school management should be involved as a support system for their teachers. This can be done by designing a policy in schools that gives the teachers the power to select educational field trips for their learners and management being the support structure.



### **6.3.3 Implications for teachers**

This study showed that most of the teachers are not interested in the educational potential of informal learning environments such as zoological gardens. This was clear when:

1. All the teachers in this study did not find out what the educational staff at the zoological gardens had planned for their learners.
2. Some teachers were not present during the lectures presented by the educational staff at the zoological gardens.
3. Most of the teachers did not plan educationally for the visits.
4. All the teachers did not prepare any worksheets for their learners' visits to the zoological gardens.
5. All the teachers did not visit the facility before the visits.

As explained in section 6.3.1, the Department of Education does not have a policy that guides teachers on how to prepare effective learning experience for learners when visiting informal learning environments. Teachers do not get guidance and support from the Department of Education and from their schools. Therefore, this explains why most of the teachers in this study showed no interest in the educational potential of the zoological gardens and why their preparations were poor or non-existence. Findings from Rebar (2012) and Anderson and Shimizu (2007) also confirm that teachers are provided with limited guidance and support to fully utilise informal learning environments for their learners' learning science. Hence, it should be the responsibility of the Department of Education to support schools and give clear guidance so that schools can fully support teachers.

### **6.3.4 Implications for National Zoological Gardens' educational staff**

It was revealed in this study that there is no communication between the educational staff at the zoological gardens and the schools. The educational staff at the zoological gardens did not brief the schools before the visits on the content they will present during their visits. In this study, teachers showed to not know the learning objectives planned by the educational staff at the zoological gardens, showing that they did not get any communication from the zoological gardens staff prior to their visits. Effective



communication between schools and educational staff in informal learning environments is important to ensure that learners gain deeper science knowledge when they visit scientific field trips (Collins et al., 2021; Davidson et al., 2010).

Furthermore, the schools were not provided with preparatory materials, learners were not given any worksheets and no follow-up activity was provided by the educational staff at the zoological gardens to learners. Therefore, the education management at the zoological gardens should monitor and ensure that there is communication between the educational staff at the zoological gardens and the schools. There should be a policy in place that makes it mandatory for the schools to connect with the educational staff at the zoological gardens and have a clear agreement and understanding on the learning objectives to be communicated to learners during the visits. Moreover, the zoological gardens can also design a special guide (booklet) that shows steps on what schools should do before they come to visit.

## **6.4 Limitations of the study**

Similar to other research studies, this study has also recorded some limitations. These are as follows:

### **6.4.1 Research design and small sample size**

This research study was an interpretive phenomenographic using a conveniently chosen sample. This research sample consisted of 10 teachers and 35 learners visiting the National Zoological Gardens. The sample size was not adequate to represent all primary schools in South Africa. Therefore, the findings of this study should not be generalised to a larger population visiting the National Zoological Gardens. However, the findings can be transferred to comparable situations as I have given a comprehensive explanation of the research site and the research process in Chapter 3. Furthermore, the findings can provide an insight into how learners perceive learning science in the National Zoological Gardens, and to what extent the National Zoological Gardens influence learners' learning science.

### **6.4.2 Researcher's belief**

As the researcher being a science teacher, her own belief about science might have influenced her understanding of the data collected in this study. However, the research



design is phenomenographic, its main purpose is to understand the participants' perceptions (Larsson & Holmstrom, 2007) rather than generalising the findings. Using three data collection methods in this study also contributed to the trustworthiness. Furthermore, including follow-up interviews assisted in the appropriate interpretation of the data in this study.

#### **6.4.3 The data reported**

An additional limitation in this study is that most of the data reported in chapter four are the self-reports of teachers and learners. It is recognized that such reported data are not strong evidence because teachers and learners' effect (Askell-Williams, 2001). However, this was mitigated by the use of three data collection methods such as interviews, observations and drawings. Furthermore, the awareness of this limitation helped when the data was interpreted.

#### **6.5 Recommendations for future studies**

This study showed that there is no cooperation that exists between the Department of Education, schools, teachers and the educational staff at the zoological gardens. This results in teachers not getting full support educationally for their learners to experience effective learning when visiting informal learning environments. The majority of the teachers in this study did not prepare educationally for their learners' visits to the zoological gardens and this led to their learners not knowing their educational expectations of the visits. For this reason, an action research project is suggested to build teachers' knowledge of informal learning environment preparations. And these teachers should get full support from the Department of Educations, schools and the staff from the zoological gardens.

When teachers get support from the Department of Education, schools and staff from informal learning environments, their learners' trips will be properly planned educationally. A properly planned educational trip includes prepared pre-activities, worksheets and follow-up activities. Therefore, future studies can evaluate these activities prepared by teachers, their worksheets and further examine learners' post-trip activities.



As a new insight into the educational staff at the zoological gardens, the study contributes to the lack of communication as one of the hinders to learners experiencing maximum learning. The findings showed that there is no communication between the educational staff at the zoological gardens and the teachers who visit the zoological gardens. The educational staff at the zoological gardens present lectures depending on learners' Grades and teachers are not involved in the preparations of these lectures. An examination of the lectures presented by the educational staff at the zoological gardens to study if they link with the school curriculum would be a valuable contribution to informal learning environments knowledge.

## **6.6 Final reflection**

The findings in this study have illustrated that teaching is a complex profession and it requires teamwork. Teachers in this study could not properly plan educational trips that will benefit learners effectively since they were not supported by the Department of Education, schools and the educational staff in the zoological gardens. I noted that teachers in this study had limited knowledge and no training concerning the process of planning for educational field trips. The Department of Education should take accountability and organise trainings where teachers would be trained and taught the procedures and processes involved in preparing for educational field trips.

However, from this study's findings, there is a need for teachers as professionals to take responsibility for their own growth as lifelong learners. Teachers should not only rely on the Department of Education to provide them with information but should go out and seek newness. According to the several studies on asset-based approach, teachers are important assets in the education system (Myende, 2015). For the context of this study, teachers played an imperative role in suggesting possible dates for the zoological garden's visits. Additionally, they were tour guides for their learners during the visits at the zoological gardens. Therefore, teachers as important assets in the education system, should seek to engage in learning communities to enhance themselves as professionals.

This study further illustrates that there is a need in South African Universities to include a curriculum in their education program that will educate teachers on how to plan and implement educational field trips. The proposed model in this study could be applied



in training teachers on how to organise effective educational field trips. This study's findings revealed that teachers influence learners' perceptions of learning science in informal learning environments, therefore, teachers should get a good support system in order to influence learners positively.





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Appendix 1.1: GDE Research approval letter



**GAUTENG PROVINCE**

Department: Education  
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

**GDE RESEARCH APPROVAL LETTER**

Date:	15 March 2019
Validity of Research Approval:	04 February 2019 – 30 September 2019 2018/431
Name of Researcher:	Photo P
Address of Researcher:	102 Blesbok Flat Arcadia Bailey Street Pretoria, 0002
Telephone Number:	079 1818 165
Email address:	patlerato@gmail.com
Research Topic:	Learners' perception of learning science in informal learning environment: a phenomenography study
Type of qualification	PhD
Number and type of schools:	Ten Primary Schools and One Other
District/s/HO	Tshwane South, Tshwane North and Tshwane West

**Re: Approval in Respect of Request to Conduct Research**

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

*[Handwritten signature and date: 15/03/2019]*

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted: 1

*Making education a societal priority*

**Office of the Director: Education Research and Knowledge Management**

7<sup>th</sup> Floor, 17 Simmonds Street, Johannesburg, 2001

Tel: (011) 355 0488

Email: Faith.Tshabalala@gauteng.gov.za

Website: www.education.gpg.gov.za



## Appendix 1.2: Request letter to the school principals

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Department of Science, Mathematics and Technology

Faculty of Education, University of Pretoria

0002 Pretoria

To the Principal,

My name is Patricia Photo. I am a PhD student at University of Pretoria. I am conducting a research on the learners' perception of learning science in informal learning environment such as the Zoological Gardens. My project is supervised by Dr Mia Abrie, senior lecturer at the University of Pretoria. The Department of Education has approved my research and a copy of the approval letter is attached to this document. I request that you give me a permission to invite teachers and learners in your school to participate in this study. The purpose of this study is to explore learning in the Zoological Gardens. Learning in the informal environment has been described as being beneficial to learners learning science however, it has not been explored systematically in the South African context.

The data will be collected through tape-recorded interviews, observations and drawings. The interview will take 20-35 minutes, and the duration of the observation will depend on the length of the trip to the Zoological Gardens. Only teachers and learners who have given their consent will participate in this study. Data collected from this study will be handled in strict confidentiality, and neither the school nor the participant will be identifiable in any report. The teachers and learners who are participating may withdraw anytime during the research process without any penalty.

After I have received approval to approach teachers and learners in your school to participate in this study, I will:

- Obtain informed consent from teachers
- Obtain informed assent from learners
- Obtain informed consent from parents
- Arrange time for data collection in your school.

It is hoped that this research will contribute to international research on informal learning environment particularly in South Africa. If you have any questions regarding this study, please



contact me or my supervisor (Cell number 079 181 8165 [patlerato@gmail.com](mailto:patlerato@gmail.com); Dr Mia Abrie [Mia.Abrie@up.ac.za](mailto:Mia.Abrie@up.ac.za)).

Thank you for taking time to read this information.

Photo Patricia  
Researcher

Dr Mia Abrie  
Supervisor

---

Department of Science, Mathematics and Technology

Faculty of Education, University of Pretoria

0001 Pretoria

I give consent for Patricia Photo to do research in \_\_\_\_\_ (name of school) and approach teachers and learners to participate in this study. I have read and understand the purpose of this study. I understand that:

- Participation by the school, teachers and learners in the school is voluntary and participants may withdraw anytime during the research process.
- Only teachers and learners who have consented to participate in the research will contribute.
- Data collected will be handled with confidentiality.
- The school name and participants' names will not be identifiable in any report.

For more information and clarity on the project I may contact Patricia Photo on 079 181 8165 or email her at [patlerato@gmail.com](mailto:patlerato@gmail.com) or Dr Mia Abrie, her supervisor, on 083 459 7220 or E-mail her at [Mia.Abrie@up.ac.za](mailto:Mia.Abrie@up.ac.za).

Principal: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_



### Appendix 1.3: Request letter to the schoolteachers

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Department of Science, Mathematics and Technology

Faculty of Education, University of Pretoria

0002 Pretoria

Dear teacher,

My name is Patricia Photo. I am a PhD student at University of Pretoria. I am conducting a research on the learners' perception of learning science in informal learning environment such as the Zoological Gardens. My project is supervised by Dr Mia Abrie, senior lecturer at the University of Pretoria. The Department of Education has approved my research and a copy of the approval letter is attached to this document. I am inviting you to participate in this study, before you agree or not agree to participate in this study please read the information of this research below

The purpose of this study is to explore learning in the Zoological Gardens. Learning in the informal environment has been described as being beneficial to learners learning science however, it has not been explored systematically in the South African context.

If you agree to participate in this study, I will be collecting data through tape-recorded interviews. The interview will take 20-35 minutes. Data collected from this study will be handled in strict confidentiality, and neither your name will be identifiable in any report. If you participate in this study, you will have the right to withdraw anytime during the research process without any penalty.

It is hoped that this research will contribute to international research on informal learning environment particularly in South Africa.

If you have any questions regarding this study, please contact me or my supervisor (Cell number 079 181 8165 [patlerato@gmail.com](mailto:patlerato@gmail.com); Dr Mia Abrie [Mia.Abrie@up.ac.za](mailto:Mia.Abrie@up.ac.za)).

Thank you for taking time to read this information.

Photo Patricia  
Researcher

Dr Mia Abrie  
Supervisor



Department of Science, Mathematics and Technology

Faculty of Education, University of Pretoria

0001 Pretoria

I agree that I have been informed about the nature of this research and that my rights have been explained to me. I have discussed the project with the research, Patricia Photo, who is conducting the project for her PhD degree, supervised by Dr Mia Abrie in the Department of Science, Mathematics and Technology Education at the University of Pretoria.

I understand that if I consent to participate in this project I will be:

- Interviewed twice, before and after the visit to the Zoological Gardens

I understand that if I participate in this study my contribution will be kept confidential and I will not be identifiable in any research report. I understand that I will remain anonymous, my participation is voluntary, and I have the right to withdraw anytime during the research process. My withdrawal will not affect me in anyway.

For more information and clarity on the project I may contact Patricia Photo on 079 181 8165 or email her at [patlerato@gmail.com](mailto:patlerato@gmail.com) or Dr Mia Abrie, her supervisor, on 083 459 7220 or E-mail her at [Mia.Abrie@up.ac.za](mailto:Mia.Abrie@up.ac.za).

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_



## Appendix 1.4: Consent letter to the parents

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Department of Science, Mathematics and Technology

Faculty of Education, University of Pretoria

0002 Pretoria

Dear Parent,

My name is Patricia Photo. I am a Natural Sciences teacher and I am currently studying PhD at the University of Pretoria. As part of my study I am conducting a research in schools and your principal has given me permission to conduct it at your school. I am doing this study so that I can find out how learners learn at the zoo.

### **Purpose**

The purpose of this study is to explore learning in the Zoological Gardens. Learning in the informal environment has been described as being beneficial to learners learning science however, it has not been explored systematically in the South African context.

### **Procedures**

- I will interview the learners twice, before and after they visit the Zoological Gardens.
- I will observe how they learn at the Zoological Gardens.
- I will ask learners to draw their favourite animal.

### **Benefits**

It is hoped that this research will contribute to international research on informal learning environment particularly in South Africa.

### **Confidentiality, Anonymity and Rights**

Data collected from this study will be handled in strict confidentiality, and neither the school or your child will be identifiable in any report. Only parents who have signed and given permission their child will participate in this study. If you or your child has any questions regarding this study, please feel free to contact me or my supervisor (cell number: 0790250594 email: [patlerato@gmail.com](mailto:patlerato@gmail.com); [Dr Mia Abrie Mia.Abrie@up.ac.za](mailto:Dr Mia Abrie Mia.Abrie@up.ac.za)).

### **Parents' permission**

I, \_\_\_\_\_ (parent, guardian) of \_\_\_\_\_,

Who is in Grade \_\_\_\_\_, give/do not give permission for my child to participate in this study.



## Appendix 1.5: Interview schedule

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### Learners

Interview and drawing template **BEFORE** National Zoological Gardens visit

Theme: Learners' perceptions of learning science in informal learning environments

This research is conducted to find learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens. Do you allow me to ask you few questions?

Participating in this research project is completely voluntary. All the information you provide in this project will be kept in confidentiality. Your responses, your school and your name will not be mentioned in this study. You have the right to withdraw from this interview anytime. You can refuse to answer questions and you will not be penalised. All the information provided will be used only for this research project.

#### Section A (Introduction)

- a. Any comments or questions before I start?

#### Section B (Demographic details)

This section deals with the background information of the participant.

- a. What is your age and date of birth?
- b. Are you a female or male?
- c. Which Grade are you in?
- d. Have you ever failed a Grade?
- e. What is your favourite subject, why?

#### Section C (Zoo previous experiences)

- a. How many times have you visited the zoo?  
*If the learner has been to the zoo before*
- b. What do you enjoy most about visiting the zoo?
- c. What do you enjoy least about visiting the zoo?
- d. What was the most memorable/important thing/s that you learned in the zoo?
- e. How do you feel about the zoo in general?

#### Section D (Zoo expectations)

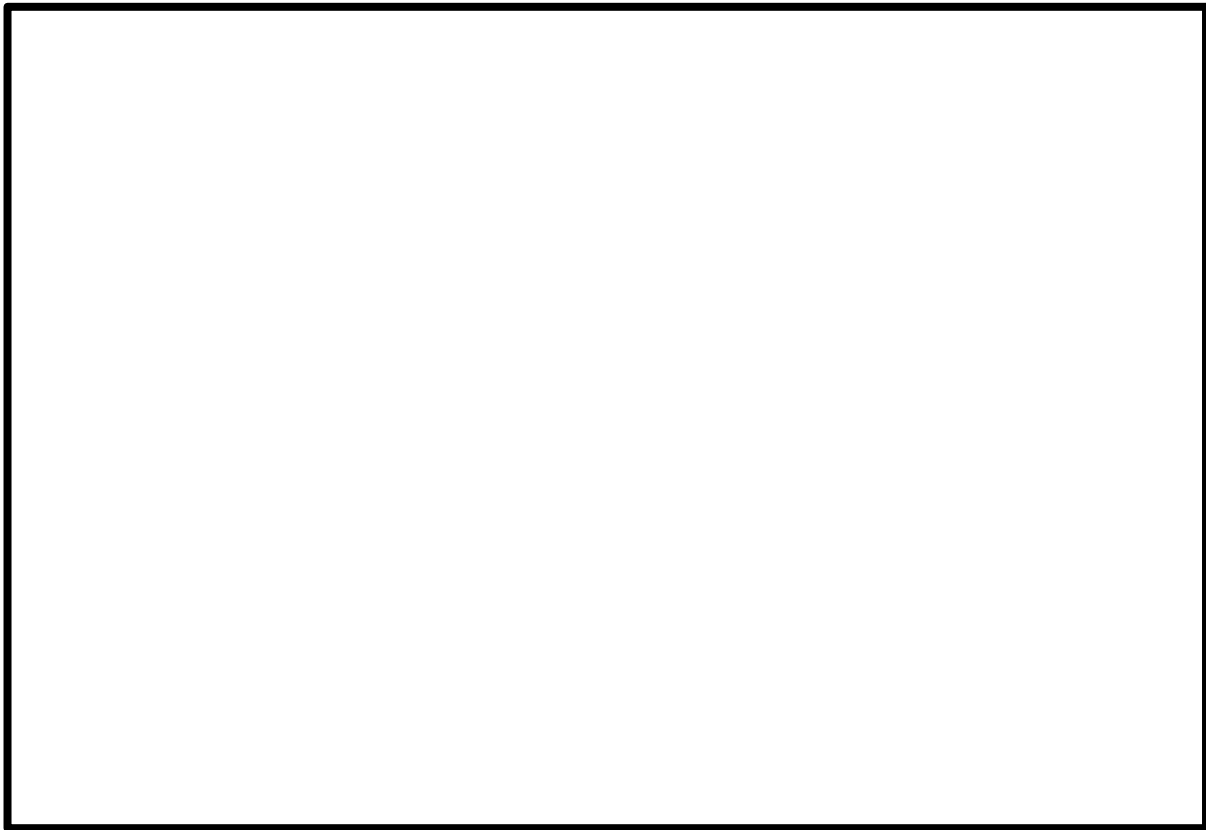




- a. What do you think you will do on the trip to the zoo?
- b. What do you think teachers will have you do?
- c. What do you want to do?
- d. Why is your class going to the zoo?
- e. How do you feel about animals?
- f. Which animal/s do you want to see and why?
- g. Would you want to work in science?

### **DRAWING TEMPLATE**

Draw your favourite animal and include its habitat.



Thank you for participating in this interview!



## Learners

Interview and drawing template **AFTER** National Zoological Gardens visit

Theme: Learners' perceptions of learning science in informal learning environments

This research is conducted to find learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens. Do you allow me to ask you few questions?

Participating in this research project is completely voluntary. All the information you provide in this project will be kept in confidentiality. Your responses, your school and your name will not be mentioned in this study. You have the right to withdraw from this interview anytime. You can refuse to answer questions and you will not be penalised. All the information provided will be used only for this research project.

### Section A (Introduction)

- a. Any comments of questions before I start?

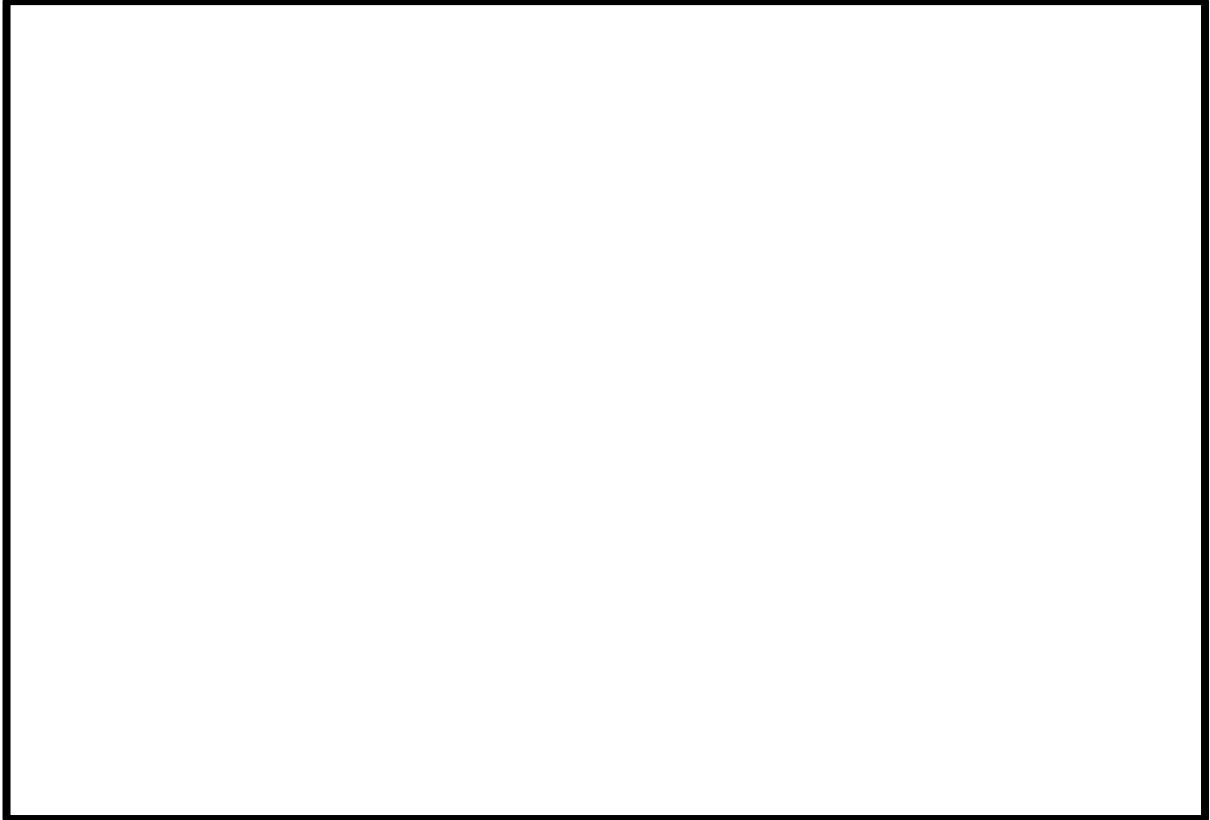
### Section B (Zoo experience)

- a. What did you enjoy most in the zoo and how was the visit to the zoo?
- b. What did you enjoy least in the zoo?
- c. If you could what would you change about your trip?
- d. What have you learnt from the zoo?
- e. Where there things you wanted to do but you did not?
- f. Are there things you would like to go back to do/see?
- g. How do you feel about animals?
- h. Which animal/s did you enjoy seeing and why?
- i. In general, how was the visit to the zoo?
- j. Would you want to work in science?



## DRAWING TEMPLATE

Draw your favourite animal and include its habitat.



Thank you for participating in this interview!



## Teachers

Interview template **BEFORE** National Zoological Gardens visit

**Theme:** Learners' perceptions of learning science in informal learning environments

This research is conducted to find learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens. Do you allow me to ask you few questions?

Participating in this research project is completely voluntary. All the information you provide in this project will be kept in confidentiality. Your responses, your school and your name will not be mentioned in this study. You have the right to withdraw from this interview anytime. You can refuse to answer questions and you will not be penalised. All the information provided will be used only for this research project.

### Section A (Introduction)

- a. Any comments of questions before I start?

### Section B (Demographic details)

This section deals with the background information of the participant.

- a. How long have you been teaching?
- b. What Grades do you teach?
- c. What subjects are you teaching?
- d. When did you start teaching those subjects (c)?

### Section C (Teachers' zoo experience)

This section deals with teachers' experiences at the zoo.

- a. What group of learners/classes do you usually take to the zoo?
- b. How often are science learners brought to the zoo?
- c. What are the reasons of bringing learners to the zoo?
- d. What preparations have been done in class for the zoo visit?

### Section D (Learners' zoo experience)

This section deals with teachers' opinions about learners' experiences at the zoo.

- a. What are your views on learners learning in the zoo?



- b. What do you think learners most enjoy when visiting the zoo?
- c. What do you think learners least enjoy when visiting the zoo?
- d. What do learners normally do when they get to the zoo?
- e. Is there any change of behaviour of learners after their visits to the zoo?
- f. What type of pictures learners take when they are at the zoo?

Thank you for participating

Interview template **AFTER** National Zoological Gardens visit

**Theme:** Learners' perceptions of learning science in informal learning environments

This research is conducted to find learners' perceptions of learning science in informal learning environments such as the National Zoological Gardens. Do you allow me to ask you few questions?

Participating in this research project is completely voluntary. All the information you provide in this project will be kept in confidentiality. Your responses, your school and your name will not be mentioned in this study. You have the right to withdraw from this interview anytime. You can refuse to answer questions and you will not be penalised. All the information provided will be used only for this research project.

### **Section A (Introduction)**

- a. Any comments or questions before I start?

### **Section B (Zoo visit)**

- a. What did learners enjoy the most at the zoo?
- b. What did learners enjoy the least at the zoo?
- c. What are your views on learners' learning in the zoo?
- d. Do you think the trip to the zoo influenced learners' attitude towards science?
- e. Overall, what would you say was the most memorable activity learners did during their visit?
- f. Is there anything that you would change for the future zoo trips?

Thank you for participating



## Appendix 1.6: Observation schedule

### OBSERVATION TEMPLATE

Observation date and time \_\_\_\_\_

Participants' School \_\_\_\_\_

#### A. Behaviour

- ✓ Are learners focused?
- ✓ Do learners move around in the zoo?
- ✓ Do learners play among themselves?
- ✓ Do learners look bored, sad, happy, excited or well-kept?

Notes:

#### B. Interaction with the environment

- ✓ What positive and negative comments are learners making pertaining their zoo environment?

Notes:

#### C. Social interaction

- ✓ What opinions, thoughts and ideas are learners sharing with their peers?



- ✓ What are learners' actions and attitudes towards their peers?

**D. Recording**

- ✓ Are learners writing notes down?
- ✓ Are learners comparing the zoo experience with their classroom experiences?

**E. Concluding the visit**

- ✓ How was the visit concluded?





## Appendix 1.7: Learners' drawings

### School A

#### Learner A



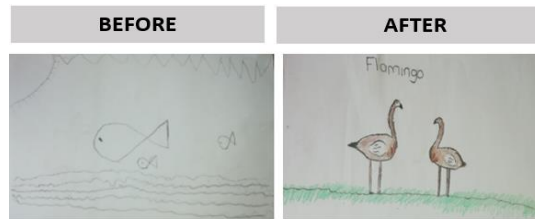
#### Learner B



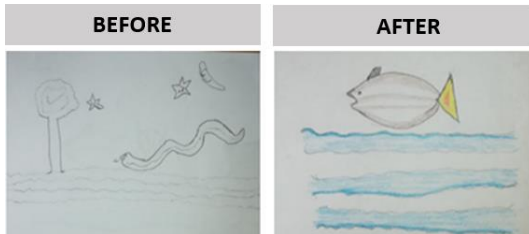
#### Learner C



#### Learner D

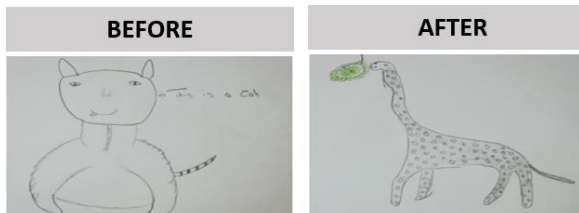


#### Learner E

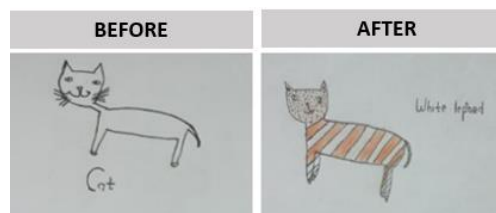


### School B

#### Learner F

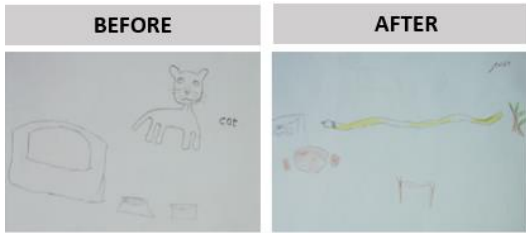


#### Learner G

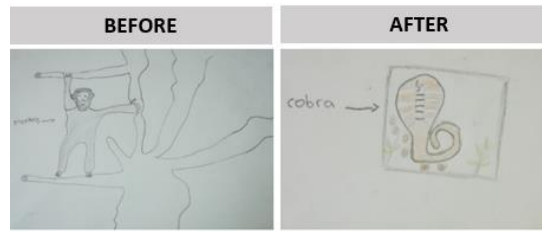




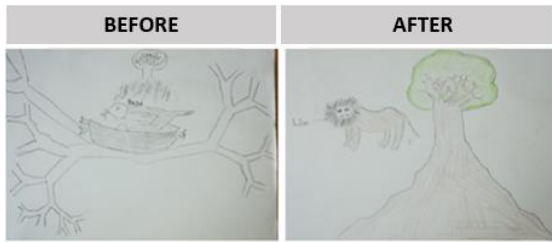
### Learner H



### Learner I

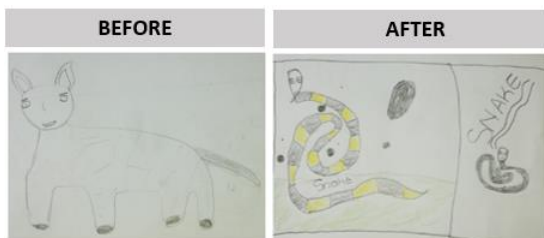


### Learner J

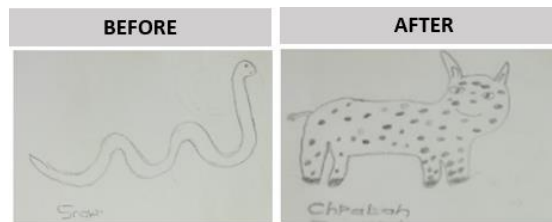


## School C

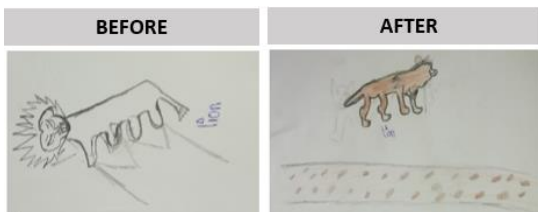
### Learner K



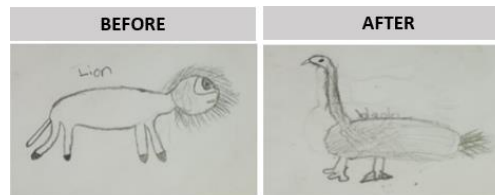
### Learner L



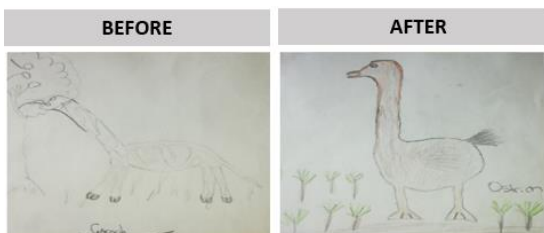
### Learner M



### Learner N



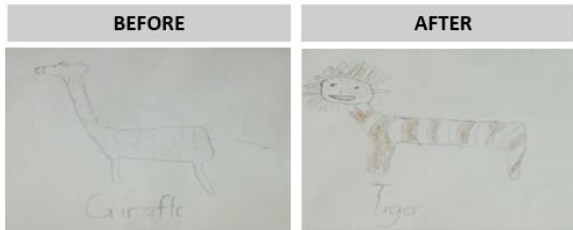
### Learner O



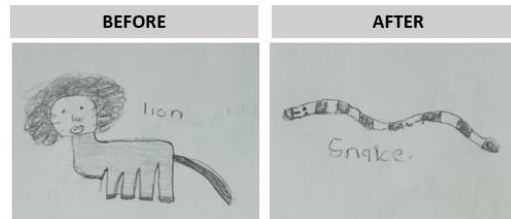


## School D

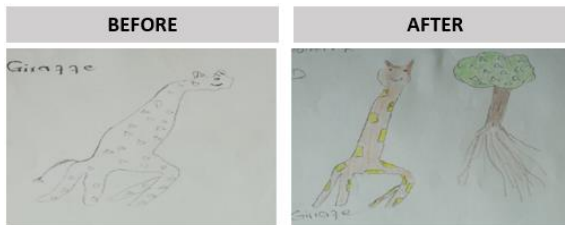
### Learner P



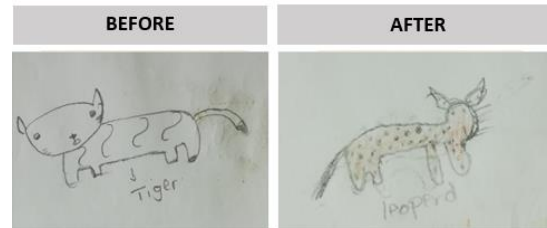
### Learner Q



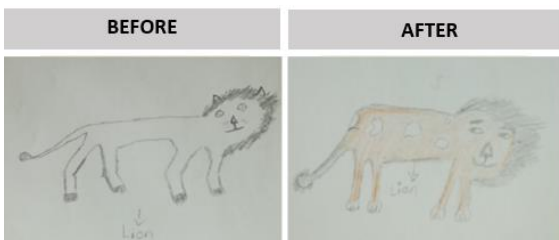
### Learner R



### Learner S



### Learner T

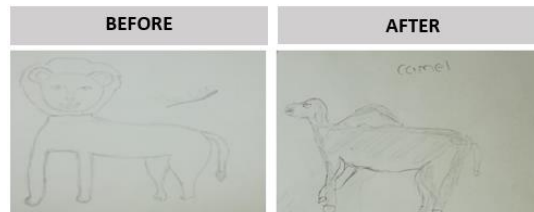


## School E

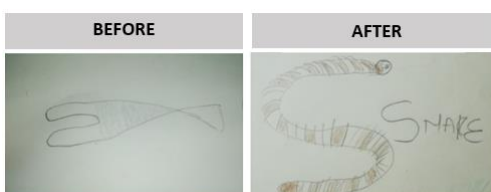
### Learner U



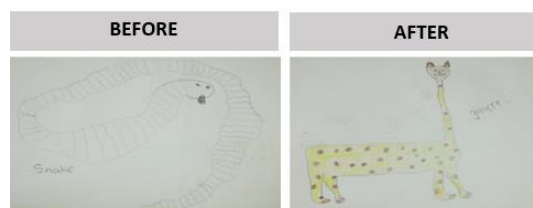
### Learner V



### Learner W

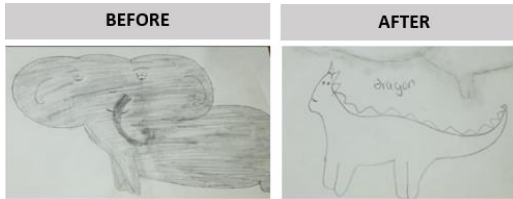


### Learner X



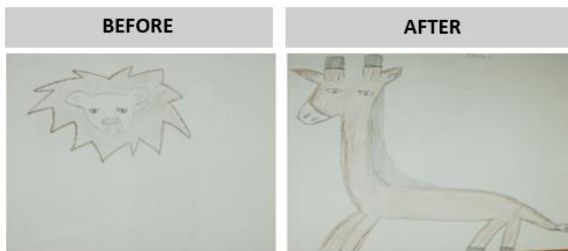


### Learner Y

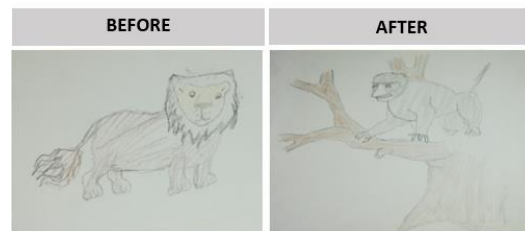


## School F

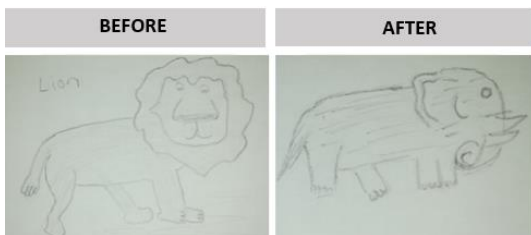
### Learner AA



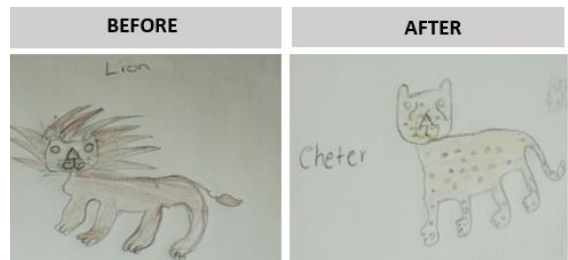
### Learner BB



### Learner CC



### Learner DD



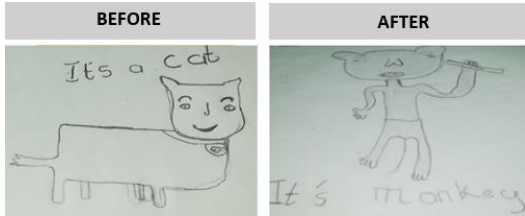
### Learner EE



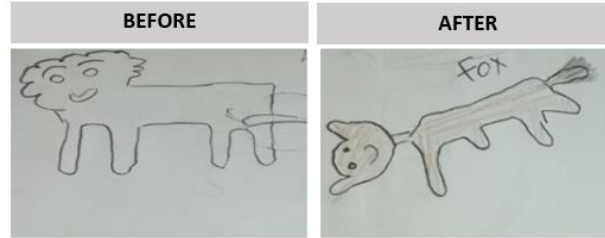


## School G

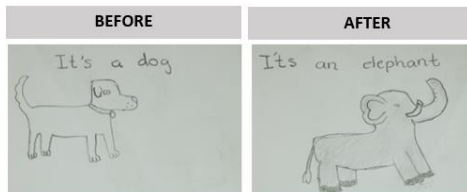
### Learner FF



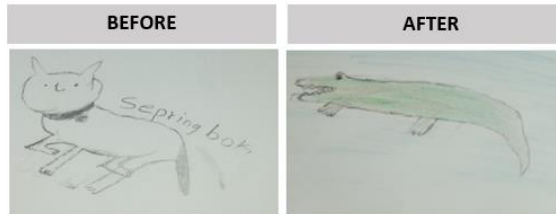
### Learner GG



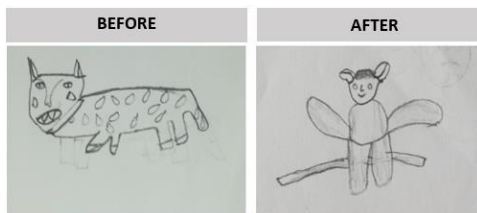
### Learner HH



### Learner II



### Learner JJ





## Appendix 1.8: Interview transcriptions

### SCHOOL A

#### LEARNERS

Learners' responses translated from Zulu/Sepedi to English

#### Pre-interview

Researcher: Okay hello learners?

Learners: Hi

Researcher: How are you?

Learners: Were fine.

Researcher: Am fine also am very fine, this is a research am doing a research asking you guys about the zoo, do you have any questions you'll like to ask me before I start or we okay, are we all good?

Learners: Yes

Researcher: Okay cool. My first question is how old are you? Learner A.

Learner A: Eleven

Researcher: Learner B?

Learner B: Eleven year's old

Researcher: Eleven years, learner C

Learner C: Ten

Researcher: Ten, D?

Learner D: Nine

Researcher: Nine

Learner E: Twelve

Researcher: Twelve, okay thank you very much you'll tell me are you a female or male, learner A? learner

Learner A: Female

Researcher: Female

Learner B: Female

Researcher: Female

Learner C: Female

Researcher: Female

Learner D: Female

Researcher: Are you a female? Sorry you are?

Learner D: A male

Researcher: Yes, a male, a boy. Yes

Learner E: Male

Researcher: A male, a boy. Please talk louder so that I can be able to hear you when I listen to it. What grade are you in?

Learner A: Grade 6

Researcher: Grade 6

Learner B: Grade 6

Researcher: Grade 6

Learner C: Grade 5

Researcher: Grade 5

Learner D: Grade 4

Researcher: Grade 4

Learner E: 5

Researcher: 5, okay and we not going to laugh at any person right, if someone makes a mistake please do not laugh. Have you ever failed a grade?

Learner A: No

Researcher: learner B?

Learner B: No

Researcher: No, learner C?

Learner C: No

Researcher: Learner D

Learner D: No

Researcher: Learner E?

Learner E: No.

Researcher: No. what is your favourite subject and why? Which subject do you think you love and why? Learner A

Learner A: IsiZulu because it's my home language

Researcher: learner B?

Learner B: Math's

Researcher: Why?

Learner B: because it's easy

Researcher: because it's easy, learner C

Learner C: Math's

Researcher: Why?

Learner C: because am still going to come across it still in grade 12 so I have to learn it

Researcher: You have to learn it, okay learner D?

Learner D: I love math's

Researcher: Why?

Learner D: because it's nice sometimes.

Researcher: It's nice sometimes right, okay learner E?

Learner E: IsiZulu

Researcher: Why?

Learner E: It's nice.

Researcher: Learner A how many times have you visited the zoo, if you have how many times

Learner A: Twice

Researcher: ahh twice, learner B

Learner B: Three times

Researcher: Three times, learner C

Learner C: Five times

Researcher: Five times. learner D?

Learner D: Two times.

Researcher: learner E?

Learner: Four times.

Researcher: Okay so you guys have visited the zoo before and then what did you most enjoy the last time you were there learner A?

Learner A: Seeing different kinds of animals

Researcher: Seeing different kinds of animals right, learner B? what did you love most the last time you were at the zoo?

Learner B: Snake

Researcher: A snake right

Learners B: Yes

Researcher: Okay, learner C?

Learner C: Lion.

Researcher: Lion why?

Learner C: because it's beautiful

Researcher: Its beautiful right

Learners C: yes

Researcher: Okay, learner D?

Learners D: A giraffe

Researcher: Giraffe, is the one you enjoyed seeing

Learners D: Yes





Researcher: Okay, last learner, learner E?

Learner E: Giraffe

Researcher: Why?

Learner E: It amazes me.

Researcher: It amazes you right, okay. What is it that you didn't like the last time you were at the zoo, what is it that bored you, doesn't have to be an animal, anything probably just going to the zoo, what is it you didn't like. Learner A?

Learner A: Eish ...

Researcher: Eish ... what is it that you didn't like?

Learner A: this other old woman

Researcher: old woman, what did she do?

Learner A: She was annoying

Researcher: She was annoying? Was she working at the zoo?

Learner A: Some white old woman, she was cheeky for no reason.

Researcher: Okay she was cheeky, she was one of those who showed you what is were and all, okay learner B?

Learner B: Lion

Researcher: Why?

Learner B: Because it wasn't doing any actions

Researcher: it wasn't doing anything, okay learner C what's something that bored you?

Learners C: Snake

Researcher: To see a snake, why?

Learners C: It is scary

Researcher: It is scary right?

Learner C: I feel like it's on me.

Researcher: You feel like what?

Learner C: I feel like it's moving on me

Researcher: You feel like it's coming towards you, okay learner D What didn't you not enjoy that bored you?

Learner D: Lion

Researcher: Lion, why?

Learner D: It didn't do anything; it was just sitting.

Researcher: It was just sitting, learner E?

Learner E: Monkey

Researcher: Monkey, what did it do?

Learner E: When I saw it I thought it will ....

Researcher: When I saw it what did it do?

Learner E: I thought it will slap me

Researcher: You thought it will slap you, okay. So now I'll ask you a question and anyone can start, it can be C or D. What's something you've learnt the last time you were at the zoo, who want to start, what's something you've learnt the last time you were at the zoo. Learner B?

Learner B: Animals I didn't know.

Researcher: Animals you didn't know right it's what you've learnt okay, thank you learner B another one? What did you learn, others you didn't learn anything, you don't remember? Learner A?

Learner A: Some animals I've noticed that they are funny just like monkeys

Researcher: Some animals are funny right, okay you've learnt that some animals are funny like monkeys, okay others? Or you don't remember?

Learners: Yes

Researcher: Okay its fine you'll remember. How do you feel about the zoo, when you think about the zoo how do you feel? Anyone can answer, how do you feel about the zoo, learner B?

Learner B: Good

Researcher: You feel good, because is?

Learner B: Fun.

Researcher: Because its fine right, okay others how do you about the zoo, learner D?

Learner D: Excited

Researcher: Excited, because you're happy you are going to the zoo, okay. Learner A?

Learner A: Also excited.

Researcher: You feel also excited right learner A, okay learner C you want to say something?

Learner C: I also feel excited.

Researcher: You also feel excited learner C, learner E?

Learner E: I feel excited also.

Researcher: You feel excited also, okay. You going to the zoo now right?

Learner E: Yes.

Researcher: What do you think you'll do on the

trip to the zoo? Learner B?

Learner B: I want to see snakes.

Researcher: You'll learn about animals, okay learner D?

Learner D: I do not know.

Researcher: You'll learn about school things, okay others? What do you think you'll do at the zoo? Okay its fine we can pass. What do you think your teachers want you to do? They'll say sit down or what, learner C?

Learner C: They'll show us animals

Researcher: They'll show you animals

Learner C: Yes, all of them that are there

Researcher: All that are there, okay learner D?

Learner D: They'll want us to sit down first then we go and see animals

Researcher: They'll say sit down, eat then you go see animals. learner B?

Learner B: I don't know.

Researcher: Okay, learner A?

Learner A: To get more information about animals so that we they ask us questions we are able to answer?

Researcher: To get more information about animals so that when they ask you are able to answer, okay is that all? Okay, what do you want to do, you are going to the zoo right? What do you want to do when you get to the zoo, you want to play with your friends, what do you want to do? Learner B?





Learner B: I want to first see a snake.

Researcher: You want to see snakes first when you arrive, okay. Learner A.

Learner A: I want to see dolphins and whales.

Researcher: You want to see whales and dolphins okay, learner E?

Learner E: I want to see a lion

Researcher: You want to see a lion, okay learner D?

Learner D: I want to see a giraffe

Researcher: You want to see a giraffe, learner C?

Learner C: I want to see a monkey.

Researcher: You want to see a monkey okay; those are things you want to do. When you think about your classmates, what do you think they'll want to do when they arrive at the zoo? Yes, learner B

Learner B: They'll play

Researcher: So, you think when you arrive they'll want to play, learner D?

Learner D: Others will learn others will play

Researcher: Others will play, others will learn right learner D, okay learner A?

Learner A: They'll want to meet other people.

Researcher: They'll want to meet other people, they'll want to walk around and meet other people right, learner C?

Learner C: I feel like they won't be any order.

Researcher: They won't be any order right, they'll be making noise and all right

Learner C: Yes

Researcher: Okay learner E?

Learner E: Others will be learning others playing, others will be learning about animals they do not know

Researcher: Others will be learning, playing or seeing animals they do not know, okay. How do you feel about animals, you love them, you hate them, you are afraid of them, they irritate you? Learner E?

Learner E: I am afraid of them

Researcher: You are afraid of them right okay learner E, learner A?

Learner A: I love animals.

Researcher: You love animals, okay another one, learner C?

Learner C: I love animals.

Researcher: You love animals, okay learner B?

Learner B: They irritate me like a monkey

Researcher: They irritate you like a monkey, okay. You've already told me which animals you want to see and why but am going to ask you again, which animal do you want to see and why? Learner A?

Learner A: Dolphin, because I've never saw it.

Researcher: Dolphin because you've never seen it before, okay learner A. learner B?

Learner B: Snake.

Researcher: Why do you want to see a snake?

Learner B: It amazes me.

Researcher: It amazes you, okay learner C

Learner C: I want to see a pig because people say it like to dirty itself, so I want to see if it is true.

Researcher: You want to see if it does dirty itself right?

Learner C: Yes

Researcher: Okay, learner D?

Learner D: I want to see a giraffe because it amazes me when it raises its long neck

Researcher: When it raises its neck okay learner D. Learner E?

Learner E: I want to see a lion because they say it makes noise.

Researcher: It makes noise, okay. Do you guys know science?

Learners: What?

Researcher: Science?

Learners: Science?

Researcher: Yes, Science. Whether its natural science

Learners: Yes

Researcher: Do you do natural science?

Learners: Yes

Researcher: So natural science has a lot of different work, when you do natural science and you are in grade 12 what kind of job can you do, like what?

Learner B: Making use of objects

Researcher: Making use of objects right, okay

Learner E: Chemicals

Researcher: Mixing chemicals, okay another one? So my question is do you want to work in science? When you grow up finish school and go to varsity do you want to work in science

Learner D: Yes, I want to see if those things they show us in TV are real

Researcher: You want to verify if what they teach you in Television is real, learner D?

Learner E: I want to see what happens when they do things in science

Researcher: So, you do want to work in science, learner B?

Learner B: I want to see what they do in science then I join them

Researcher: You want to see how they do things in science, learner A

Learner A: I want to see what they do when mixing chemicals

### Pre-Interview (Drawings)

Researcher: You want to see what they do when mixing chemical, what's going to happen right now am going to ask you guys to draw me an animal any animal, even if you can't draw it's okay, just draw it and am going to ask you what's that animal and where it lives, right. Learner E tell me about the picture what did you draw?

Learner E: Snake.

Researcher: Snake, where does a snake live?



Learner E: It lives, it lives in water

Researcher: It lives in water okay. Learner D what did you draw?

Learner D: Fish

Researcher: A fish, where does a fish live?

Learner D: In water.

Researcher: In the water right, okay thank you. Learner C what did you draw?

Learner C: Fish

Researcher: Fish okay thank you very much, learner B what did you draw?

Learner B: Snake

Researcher: Where does your snake lives?

Learner B: In the grass

Researcher: In the grass, okay learner A what did you draw?

Learner A: Elephant

Researcher: An elephant, where does your elephant lives?

Learner A: In dry land

Researcher: In dry land okay thank you very much

### Post-interview

Researcher: Okay guys, you guys are very welcome, anyone can answer me randomly it doesn't matter. My first question is what you enjoyed the most at the zoo. How was the visit to the zoo? Yes, learner D?

Learners D: Seeing different types of animals because it was also fun and enjoyable

Researcher: Oh, okay nice.

Learners B: Mem can I answer in Zulu.

Researcher: Yes. Yes, learner B?

Learners B: When we were walking around the zoo, my friends were showing me animals which we did not know and our teacher from the zoo did not teach us about those animals. My friends and me were guessing the names of these animals, but our schoolteachers helped us with the names.

Researcher: Okay, others what did you guys enjoy the most? Yes, learner A?

Learners A: Playing

Researcher: Playing, how were you guys playing

Learners A: Enjoyed rides

Researcher: Oh rides, kiddies rides, different rides. What is one ride you enjoyed the most?

Learners A: The train.

Researcher: A train, the time you were inside the train did you see certain things?

Learners A: Yes

Researcher: What did you see?

Learners A: Animals

Researcher: Did you like that or no?

Learners A: I did.

Researcher: Okay, others, what did you enjoy, yes learner C?

Learners C: I enjoyed seeing fishes

Researcher: You enjoyed seeing fishes, Why. There were beautiful?

Learners C: Yes.

Researcher: Okay, yes learner E?

Learners E: I enjoyed seeing a crocodile

Researcher: You enjoyed seeing a crocodile, why?

Learners E: It was big.

Researcher: It was big right, okay. what did you guys enjoy the least at the zoo, what's something you didn't enjoy? Learner C?

Learners C: Giraffe because I didn't see it.

Researcher: Oh, you didn't see it

Learners A: We saw it, but only just a glimpse

Researcher: Oh, you didn't enjoy because you didn't see it

Learners C: yes

Researcher: Even if others saw it but you didn't it.

Learners C: yes

Researcher: Okay learner B?

Learners B: I didn't enjoy dragon because it didn't appear and no action also, only saw one

Researcher: Only saw one, so you didn't enjoy because you only see it. Learner A?

Learners A: I didn't enjoy because teachers refused for us to buy

Researcher: You didn't enjoy because teachers refused for you to buy, so you guys had money?

Learners A: Yes

Researcher: but they refused don't buy this, don't buy this. Okay learner D?

Learners D: I didn't enjoy when ... what's this. I didn't enjoy walking on the bridge I didn't enjoy because some children were busy jumping and it made us feel very scared at that bridge

Researcher: Oh, in the bridge there was a sheep

Learners D: No, the was no sheep it was that bridge

Researcher: Oh, the bridge that plays around

Learners D: yes

Researcher: So, there were people who were like playing, Oh my God that's scar, learner E?

Learners E: I didn't see a big lion

Researcher: You didn't see a big lion you only saw a small one and that was boring for you?

Learners E: Yes

Researcher: Okay and then if you could what would you change about the zoo, if like you were told you are going back to the zoo what would you change, what would you say this shouldn't be there, learner B?

Learners B: So that we don't go back to those stairs and come down again

Researcher: Don't go back to those stairs okay, learner D?

Learners D: Don't go back to that bridge again?

Researcher: Don't want to go back to that bridge again, okay learner A?

Learners A: I want to ride the cable car

Researcher: You want to ride the cable car,



why what was happening with it?

Learners A: We didn't ride it

Researcher: Be sure that you going to ride it

Learners A: yes

Researcher: Okay others what would you change? .... .. you wouldn't change anything?

Learners C: Maybe I'll want to see a giraffe

Researcher: Oh, learner C you'll prefer to see a giraffe?

Learners C: yes

Researcher: Okay, learner E?

Learners E: I'll want to see a zebra

Researcher: You'll want to see a zebra okay. What have you guys learnt from the zoo? Learner C?

Learner C: Different types of animals

Researcher: What do you means?

Learner C: That animals are different.

Researcher: Okay learner B?

Learners B: That other animals don't love us.

Researcher: That some animals don't love us human beings?

Learners B: Yes

Researcher: Okay, others what did you learn at the zoo? Learner E?

Learner E: I do not remember.

Learners A: Snakes can eat anything.

Researcher: Okay let's pass then for now. Okay were there things you wanted to do but you didn't do? Learner B

Learners B: yes

Researcher: What's that

Learners B: Cable car.

Researcher: You wanted to ride a cable car but did not?

Learners B: Yes

Researcher: Okay, learner D?

Learners D: Big will ride

Researcher: What?

Learners D: Big will ride

Researcher: Oh, big will ride, you guys wanted to go to big will ride but you didn't, okay learner A same thing as Learner D. Others, is there something you didn't do, and you wanted to do it?

Learners E: We wanted to buy something, but they refused

Researcher: Sorry?

Learners E: We wanted to buy things, but our teacher refused for us to

Researcher: Oh, you wanted to buy something learner E, but they refused neh

Learners E: Yes

Researcher: learner C, you are okay?

Learners C: Yes

Researcher: Are there thing you would like to go back to do or see. Learner C

Learners C: To do them.

Researcher: Like what?

Learners C: To go ride wheel go around

Researcher: Okay learner A?

Learners A: To see them. A shark.

Researcher: To see a shark

Learners C: There is a shark, but we didn't see it.

Researcher: You didn't see it?

Learners A: No, we didn't, it wasn't a shark it looked like it

Researcher: Okay learner B?

Learners B: I want to see a dolphin.

Researcher: You wanted to see a dolphin.

Learners B: yes

Researcher: So, you'll like to see a dolphin

Learners B: yes, want to see if its scarier than a shark.

Researcher: Okay others learner D and E? You are okay? How do you feel about animals, since you are coming from the zoo how do you feel? Learner D?

Learners D: I feel that animals can be tricky too because some animals can eat you easily some animals really have to ty harder to eat you, some animals do things easily sometimes hard

Researcher: Okay, others, how do you feel?

Learners D: Animals can be tricky

Researcher: Animals are what?

Learners D: Animals can be tricky

Researcher: Can be tricky, okay learner B?

Learners B: I feel good about animals

Researcher: You feel good about animals.

Learners B: because there are things we don't live with around

Researcher: There are things you don't live with around right

Learners B: Yes.

Researcher: So, it was nice to go there and see them, okay learner A?

Learners A: I love animals because some animals protect us.

Researcher: You love animals because some of them protect us, learner C?

Learners C: I was scared because some animals eat people.

Researcher: You were scared because some animals eat people, okay learner E?

Learners E: Gorillas wanted to touch us

Researcher: Gorillas wanted to touch you, okay. Which animal do you guys enjoy seeing and why? Learner A?

Learners A: Penguin because I've never saw a penguin before.

Researcher: You've never saw a penguin before, learner B?

Learners B: Peacock

Researcher: Why?

Learners B: Because I love its wings

Researcher: You like?

Learners B: It wings.

Researcher: It wings, how are the wings?

Learners B: Very beautiful



Researcher: Beautiful right, they have different colors, were you guys told why they have different colors, or do you know?

Learners: Nope

Researcher: They didn't say anything okay, learner D?

Learners D: Gentle ... ahh the gentle Gorillas

Researcher: Okay why?

Learners D: because I've never seen a Gorilla in my life even once, it was the first time seeing a Gorilla.

Researcher: Mm ... okay nice, learner C which animal did you enjoy?

Learners C: Fish

Researcher: Why fish?

Learners C: I love it.

Researcher: You love it right?

Learners C: Yes

Researcher: Okay, learner E?

Learners E: I enjoyed a snake.

Researcher: Why?

Learners E: It has beautiful colors.

Researcher: It has beautiful color, okay learner D?

Learners D: Flamingo twin

Researcher: Why?

Learners D: because its beautiful pink color makes me so happy.

Researcher: Okay the last time I asked you if you want to work in science

Learners D: In?

Researcher: In science. Science you can be an engineer, work at the zoo, work with plants or with animals. So, am still asking you, would you like to work in science? Learner B

Learners B: yes, especially at the zoo because I'll learn what animals eat, love and all.

Researcher: Okay, learner D?

Learners D: Yes, I do so much because I could learn so much, I could learn that if you do this you could end up doing this, if you do this you could end up doing this ...

Researcher: Okay.

Learners D: Its better at the zoo because if you are in the zoo you can learn so much about animals, that some animals can be dangerous while others are sweet.

Researcher: How was the visit to the zoo?

Learner A: I loved animals because some animals protect us. It was very nice to see animals at the zoo. Animals such as dogs protect us, but there are no dogs at the zoo. Most animals at the zoo are dangerous, but it was still nice to learn about them.

Learner B: It was okay, I enjoyed.

Learner C: It was nice to go to the zoo. Monkeys were funny and acting funny. I was happy when I saw monkeys jumping around.

Learner D: It was so fun, and I learned.

Learner E. It was good.

Researcher: Okay, others? Would you like to work in science, learner A it seems like you just like food that's all? Learner C?

Learners C: No

Researcher: Okay why?

Learners C: I don't like science

Researcher: Sorry?

Learners C: I don't like science.

Researcher: You don't love science, right?

Learners C: Yes

Researcher: Okay, yes learner A?

Learners A: Yes; especially with chemicals

Researcher: especially with chemicals okay, learner E what do you say?

Learner E: I am afraid some animals may eat me

Researcher: Sorry?

Learner E: I don't want animals to eat me, so I don't want to work in science.

Researcher: Oh, you afraid some animals may eat you, okay.

Learner E: Yes.

Post-interview (Drawings)

Researcher: Okay. You guys have drawn different animals for me right, so am going to ask you from A to E what have you drawn. Learner A what have you drawn?

Learner A: Giraffe

Researcher: Why

Learner A: Because it is sweet, nice and cute.

Researcher: It is sweet, nice and cute, learner B what did you draw?

Learner B: Peacock

Researcher: Why?

Learner B: It has beautiful wings.

Researcher: It has beautiful wings, learner C:

Learner C: Small fishes and big fishes.

Researcher: Small fishes and big fishes, why?

Learner C: I love fishes.

Researcher: You love fishes neh, learner D?

Learner D: Flamingo.

Researcher: Why?

Learner D: Because its so beautiful and its pink feathers make me loves it so much because my favorite color is pink too.

Researcher: Mm learner E?

Learner E: Shark.

Researcher: Why a shark?

Learner E: Because others are beautiful, other are not.

Researcher: Because some other sharks are beautiful, others are different

Learner E: Yes.

Researcher: Okay. Thank you

TEACHER

Pre-interview

Researcher: Teacher Kagiso you are very welcome to school A, so my research is voluntary am not forcing you and whatever information I'll get from you will hold it with confidentiality am



not supposed to use your real name and then even when you read my research report you won't know where you've answered because everyone will have their own name so you won't know. I don't know if you have any question before we start?

Teacher Kagiso: No

Researcher: No questions okay, my first question is how long have you been teaching?

Teacher Kagiso: 3 years

Researcher: 3 years

Teacher Kagiso: Its about 2 to 3 years

Researcher: 2 to 3 years

Teacher Kagiso: Actually 2 years and 6 months

Researcher: 2 years and 6 months okay, what grades are you teaching?

Teacher Kagiso: Grade 4, 5 and 6

Researcher: Grade 4, 5,6 then which subjects are you teaching?

Teacher Kagiso: Mathematics

Researcher: Mathematics and is that all?

Teacher Kagiso: In this school am teaching mathematics only, but my qualification says mathematics, natural science and technology

Researcher: Oh, okay I hear that. When did you start teaching mathematics?

Teacher Kagiso: May 1 2017

Researcher: Okay, that's when you started

Teacher Kagiso: Yes

Researcher: So, when you started teaching you started with math's?

Teacher Kagiso: Yes

Researcher: Okay and most of the time which group of learners do you take to the zoo; you take maybe grade 4 or 5 or?

Teacher Kagiso: No usually we take from grade R to grade 6, because at zoo grade R to grade 3 they do exactly what's also needed there, animals, water where does the snake lives and all

Researcher: Okay so they also do that, so normally is the whole school.

Teacher Kagiso: But here at school we are divided into two, us the intermediate we look after the intermediate learns the foundation phase teachers looks at foundation phase learners.

Researcher: Okay

Teacher Kagiso: At the zoo we look at what does our syllabus say, like now its term 2, natural teacher is based on skeletons ...

Researcher: Okay.

Teacher Kagiso: Animals related things, that's why we all are going.

Researcher: Okay.

Teacher Kagiso: Then next term in September when we go we are divided, foundation goes back to the zoo

Researcher: Okay

Teacher Kagiso: Then we go to Platinum because will be busy with stars, earth, continent

Researcher: Oh ...

Teacher Kagiso: Will be busy with those stars what, what.

Researcher: Okay nice.

Teacher Kagiso: yes, we divide, depending what does the syllabus says, if its matter and material we cannot go to the zoo

Researcher: Zoo okay

Teacher Kagiso: Yes

Researcher: Do you guys normally say we are taking only kids who are doing natural science to the zoo?

Teacher Kagiso: No, oh ... but remember in primary it's not divided

Researcher: Because everyone is doing natural science.

Teacher Kagiso: Yes, so we just take all our kids and we go to the zoo, but we look at our curriculum how we can assist natural science teacher, remember purpose of the tour is educationally

Researcher: Oh ... yes

Teacher Kagiso: We look at does natural science teacher link with probably social science teacher then we go to museum combine with platinum if we not going to the zoo

Researcher: Oh ... okay

Teacher Kagiso: But now we are going to the zoo because we are busy with animals.

Researcher: Okay although you've answered me but what are the reasons for taking kids to the zoo, you may ask if you want to, I don't know if there's something you want to add

Teacher Kagiso: We take learners to the zoo because they are young and in foundation phase unlike in high school. I personally want learners to have fun mostly.

Researcher: Yes

Teacher Kagiso: Especially here in Gauteng, kids may even be afraid of a cow than a car

Researcher: Yes

Teacher Kagiso: These kids do not know a cow, I've also lived here for almost 3 years and I've also never saw a cow, goat

Researcher: Yes

Teacher Kagiso: They need to know what does it eat, where does it lives and all, so we like for them to go to zoo so that they may see what this kind of an animal eats and all, because at the zoo we become interested saying they eat veggies

Researcher: Yes

Teacher Kagiso: They cut them, and all feed those monkeys and what's not

Researcher: Yes

Teacher Kagiso: So, we like taking them there, because they going to study and it's better for a child to do an experienced than theory

Researcher: Yes

Teacher Kagiso: Snakes stays in a cave and all that then they become surprised when they see it at home, when a child see a cave they become like "Oh this is the cave mem was talking about"

Researcher: Yes





Teacher Kagiso:  
Because they do not know a cave, they become lost

Researcher: Yes

Teacher Kagiso: Then you able to show them this is the cave I was talking about

Researcher: Yes

Teacher Kagiso:  
There's also cobra, this is the cobra I was talking about, plus sometimes we are able to touch it

Researcher: Yes

Teacher Kagiso: So, a child experienced and gains knowledge even take it to home or school, they even tell their family what they've seen

Researcher: yes

Teacher Kagiso: That's the reason we take them to the zoo, so that they learn more and more.

Researcher: Do you think kids learn at the zoo; do you think they do learn especially in primary school?

Teacher Kagiso: They learn a lot; they learn a lot.

Researcher: Yes

Teacher Kagiso:  
Because sometimes I go with them because I love kids and I will guide them and they'll be like mem "Here's what we've learnt in class, here it is" knowledge is being added

Researcher: Yes, it's been added

Teacher Kagiso: This animal we've learnt in class look what it does and all, then I'll ask them "How do you know that" and they'll be like "Our teacher has taught us in class"

Researcher: Yes

Teacher Kagiso: Even during exam a child is able to remember.

Researcher: To remember.

Teacher Kagiso: Plus, English teacher during exam she gives them a topic to talk about the zoo

Researcher: Okay.

Teacher Kagiso: They'll be like "friend I was there, didn't you go, I was there" a child is able to write what they saw so I've seen going to the zoo the child benefits

Researcher: Benefits

Teacher Kagiso: it's not just a tour of going, they do learn

Researcher: Yes.

Teacher Kagiso: Plus, at the zoo they'll be way too many schools and kids end up making friends

Researcher: Yes

Teacher Kagiso: They'll be running around and all

Researcher: They socialize

Teacher Kagiso: Yes, they socialize, they talk with those animals that do talk and play games

Researcher: Oh yes.

Teacher Kagiso: Yes, we even ride elephants, even I at this age when am at the zoo I do not come back empty

Researcher: Yes, no you can't.

Teacher Kagiso: I can't even wait for Tuesday, because I want the ride where they say you ride and ...

Researcher: Oh, that's scary

Teacher Kagiso: Yes, so that we can use it to see animals properly.

Researcher: and then what do you think kids enjoy most when they are in the zoo?

Teacher Kagiso: They enjoy snakes, like a lot

Researcher: Yes

Teacher Kagiso: They love snakes and monkeys also, plus they can't be still

Researcher: Yes

Teacher Kagiso: When those monkeys go around and round they enjoy that

Researcher: Oh ... yes

Teacher Kagiso: They enjoy seeing animals sitting where they are

Researcher: Yes

Teacher Kagiso: Lions, elephants and whatnots.

Researcher: They enjoy that?

Teacher Kagiso: Yes, and kinds of birds, long, those with long tails

Researcher: colorful

Teacher Kagiso: Yes, colorful and all

Researcher: What do you think they do not enjoy at the zoo? The way you see it?

Teacher Kagiso: What they do not enjoy?

Researcher: Yes

Teacher Kagiso: When they are supposed to learn when someone is explaining

Researcher: Oh ...

Teacher Kagiso: No, they do not enjoy that

Researcher: Like a tour, a tour guide

Teacher Kagiso: Tour guide.

Researcher: The one that explains

Teacher Kagiso: Yes, without showing them, no. There's where we usually sit like a ground

Researcher: Yes

Teacher Kagiso:  
There's someone down there who explains, if he doesn't take out that pamphlet to show you what he's talking about and you can't explain something before taking it out

Researcher: Yes

Teacher Kagiso: before explaining it

Researcher: You have to explain it first

Teacher Kagiso: While he's busy explaining it they are bored, until he takes it out and demonstrates then everyone's eyes pop out

Researcher: Oh ...

Teacher Kagiso: Then they become happy

Researcher: Oh ... wow

Teacher Kagiso: So, I think they get bored when you talk about something they do not know; they want to see

Researcher: Oh, they want to see. Okay, okay. Even this one you've already answered me, but I'll see if there's something you want to add, what do learns normally do when they get to the zoo

Teacher Kagiso: Kids?

Researcher: When they arrive.



Teacher Kagiso: They are forever “wowed”

Researcher: Okay.

Teacher Kagiso: They are wowed, they run around wanting to see, remember others already know the place because they've been there the year before, so they'll be with their new friend who has not being in the zoo before.

Researcher: Oh ... yes who has not been in the zoo before

Teacher Kagiso: They'll run around and tell their friend which animal lives where, they enjoy running around and look while we go after them and with them

Researcher: Oh ... yes

Teacher Kagiso: There's some boat we got in

Researcher: At the zoo

Teacher Kagiso: There were so excited, yes at the zoo, we got in the boat

Researcher: Wow

Teacher Kagiso: We were moving with a boat in water, it was really nice.

Researcher: They loved that?

Teacher Kagiso: Yes, they loved that

Researcher: Do you think there's some change of behavior in this, probably before going to the zoo and coming back from the zoo, in school there's some bit of change of behavior

Teacher Kagiso: There is a change of behavior.

Researcher: Yes

Teacher Kagiso: Like in class when other kids haven't arrived they'll talk and I'll be like “This pig” saying it in Zulu, they didn't understand then

Researcher: Yes

Teacher Kagiso: but now when I say it they be like Hai mem

Researcher: Yes

Teacher Kagiso: and am like the last time I checked you didn't know what's a pig and they be like remember mem I've seen it at the zoo

Researcher: They didn't care

Teacher Kagiso: Yes, but now they know, they start behaving better because when you say them like a certain animal they know how it is and they don't want to be like it.

Researcher: Normally do you allow kids to bring their own phones when they go to the zoo or because its primary generally no.

Teacher Kagiso: No we do not allow them but there's photographers

Researcher Yes

Teacher Kagiso: Even when they take photos they like taking them with big animals like elephants

Researcher: Yes

Teacher Kagiso: They love taking photos with those and birds, those who are colorful

Researcher: Yes

Teacher Kagiso: They love those; I've seen when they come back with photos they love those

Researcher: Mm ...

Teacher Kagiso: There's also a mini zoo that arrives with its animals like a collage

Researcher: Okay.

Teacher Kagiso: A child R80, R50 there's a child photo R30 for school. When we say they should take photos, they love those were they are holding snakes. Some will even cry because they are afraid of snakes. They love big 5 mostly.

Researcher: Okay teacher Kagiso we are done thank you very much

Teacher Kagiso: We are done, now.

Researcher: Yes, we are done.

#### Post-Interview

Researcher: Teacher Kagiso how are you?

Teacher Kagiso: I'm fine.

Researcher: I'm very good as well. Okay this is our second interview after the learners from the zoo. I only have six questions, so they going to be fast

Teacher Kagiso: Okay.

Researcher: my first question is, what did learners enjoy the most at the zoo?

Teacher Kagiso: The thing that I've saw there, they were enjoying to interact with other learners, other school learners, they talked, played.

Researcher: Okay

Teacher Kagiso and moving around:

Researcher: And moving around.

Teacher Kagiso: Watching those animals yes, because they were animals that we are not used to, its cani ... that has a long neck

Researcher: Okay.

Teacher Kagiso: Something in the neck, it's an animal we are not used to

Researcher: Yes

Teacher Kagiso: Like in Johannesburg zoo we have a few

Researcher: Oh ...

Teacher Kagiso: At the Pretoria zoo they have add others.

Researcher: Okay. What's something do you think they didn't enjoy?

Teacher Kagiso: Something they didn't enjoy? Oh, when their tour guide when he teaches them

Researcher: Yes

Teacher Kagiso: their get bored

Researcher: Okay.

Teacher Kagiso: there were like to watching animals moving around rather than to sit down and ... listen

Researcher: Than listen.

Teacher Kagiso: When I asked them why are you keeping quiet like this? There were saying “No mem at school we used to listen why, so we have to listen again”

Researcher: Oh ...

Teacher Kagiso: Yes.

Researcher: Oh.. okay. So, in your views do you think kids do learn at the zoo or they do not?

Teacher Kagiso: They are learning because it





is adding from their pre-knowledge. When they come back from the zoo.

Researcher: May you please elaborate how?

Teacher Kagiso: When they got back from the zoo trip, in the classroom they were explaining that they liked this and that. So that showed their learning.

Researcher: Unlike at school right?

Teacher Kagiso: Yes, unlike at school.

Researcher: Okay, do you think trip to the zoo influence learner's attitude towards science, it influences them to love science or hate science.

Teacher Kagiso: No it had a great attitude.

Researcher: Okay.

Teacher Kagiso: I think they will like more science

Researcher: After the zoo trip right?

Teacher Kagiso: Yes, after they went to the zoo.

Researcher: Okay, so what would you say it was their most memorable activity learners did during their visit, saying you see this one they won't forget it.

Teacher Kagiso: Something they did, different types of snakes

Researcher: Yes

Teacher Kagiso: I don't think they will forget it, because the tour guide has explained it thoroughly, types of snakes, function, like cobra when it walks what does it do?

Researcher: Yes.

Teacher Kagiso: what does it eats, there's another one Mamba that changes colors

Researcher: Yes

Teacher Kagiso: so they were enjoying there, there were answering questions, asking questions, laughing and yes.

Researcher: Okay is there anything you'll change for future Zoo trips when organizing, is there something you think you'll change?

Teacher Kagiso: At school?

Researcher: Yes, is there something maybe you think you can do different about this trip.

Teacher Kagiso: Yes; there is, like my opinion says I wish at the zoo, maybe when kids are done seeing animals they can swim ...

Researcher: Okay.

Teacher Kagiso: Zoo people should give kids snacks, so that kids may have fun, eat the same thing, every child, dressed somehow and get small packages

Researcher: Okay.

Teacher Kagiso: So that they can communicate with other children, that's what I was even telling our principal that yes the tour was alright, but I wish we could post letters like KFC

Researcher: okay ..

Teacher Kagiso: and others so that kids can eat the same thing, so that they enjoy, but during their tour that's when they communicate

Researcher: Yes

Teacher Kagiso: a grade 6 learner communicating with grade 6, grade 1. Unlike when one eats pizza, one eats bread and butter.

Researcher: Eish ...

Teacher Kagiso: That's what I've observed. Next time when we say R300 we should include food

Research: Food

Teacher Kagiso: So that they may eat the same thing, even if a child does carry their own food ...

Researcher: but they'll eat the same thing

Teacher Kagiso: Yes, it's nice because we are carrying the same food.

Researcher: Okay thank you so much.

## SCHOOL B

### LEARNERS

Learners' responses translated from Zulu/Sepedi to English

#### Pre-interview

Researcher: As I've said am going to researcher you and I am going to ask you about zoo, you are going to the zoo right now right? When you come back am going to researcher you and ask you what you did and learn as I've said guys am going to give you

names as am not supposed to use your real names

Learners: names.

Researcher: Question number one ill start with you learner...

Learner F: F

Researcher: ...learner F, what is your age, how old are you?

Learner F: Eleven years

Researcher: eleven years and you?

Learner G: 10 years' old

Researcher: 10 years you are learner?

Learner G: I am learner G

Researcher: G and learner H?

Learner H: 12 years' old

Researcher: 12 years old, learner I?

Learner I: 11 years

Researcher: You are?

Learner I: 11 years' old

Researcher: 11 years old and then learner J?

Learner J: 11 years

Researcher: 11 years old. You'll tell me if you are a female meaning you are a girl, or you are a male meaning a boy. What are you learner...

Learner F: I am a female

Researcher: you are a female

Learner G: I am a female

Researcher: You are a female.

Learner H: I am a female



Researcher: you are a female learner?

Learner H: learner H

Researcher: Learner H and learner I?

Learner I: I am a male

Researcher: You are a male, learner J?

Learner J: I am a male

Researcher: You are a male. Okay, thank you very much, what grade are you in learner F?

Learner F: I am in grade 6

Researcher: grade 6, okay learner G?

Learner G: I am in grade 5

Researcher: grade 5 learner H?

Learner H: I am in grade 7

Researcher: grade 7, learner I?

Learner I: I am in grade 6

Researcher: grade 6, learner J

Learner J: I am I grade 7

Researcher: grade 7. Okay thank you very much, you'll tell me if you've ever failed a grade and we not going to laugh, if ever you've failed a grade or not. Learner F have you ever failed a grade before

Learner F: No, I haven't

Researcher: okay, learner G have you failed a grade

Learner G: No, I haven't

Researcher: okay, learner H have you failed a grade before?

Learner H: no, I haven't

Researcher: okay, learner I have you failed a grade before?

Learner I: no, I haven't

Researcher: okay, learner J have you failed a grade before?

Learner J: No, I haven't.

Researcher: so, none of you have failed a grade. What's your favourite subject and why? Anyone can start, yes learner J?

Learner J: Math's

Researcher: Why?

Learner J: it is.....

Researcher: It is?

Learner J: Not stressing me.

Researcher: Stressing neh, okay you guys are also allowed to use your mother tongue, even its Zulu or whatever you are allowed. Learner H?

Learner H: I love math's because when I count sums it makes me think about many things

Researcher: Okay, learner F.

Learner F: I like science because we learn more things that have been made or like golden rhinoceros, I love reading about it.

Researcher: okay, learner I?

Learner I: I love English because it makes me concentrate and I gain a lot of knowledge

Researcher: Okay nice, learner G

Learner G: I love social sciences because I learn about ...

Researcher: You learn about?

Learner G: Social sciences

Researcher: What do you learn?

Learner G: About (can't hear)

Researcher: Mm okay, okay let's continue, it can start with anyone, how many times have you visited a zoo? If you have not you'll say no I have not, if you have count. Yes, learner H?

Learner H: I have visited the zoo because it was my cousin's birthday, so we went as a family

Researcher: How many times

Learner H: Thrice

Researcher: Oh...3 times

Learner H: Yes

Researcher: Okay anyone, learner F?

Learner F: I've visited the zoo 2 times when my mom had a picnic

Researcher: Mm okay nice, anyone, yes learner J?

Learner J: I've visited once, it was a school trip

Researcher: it was a school trip, okay learner G?

Learner G: I've visited only once

Researcher: Only once

Learner G: Yes, it was a school trip

Researcher: Okay, learner I?

Learner I: I've visited the zoo three times

Researcher: three times neh, okay. Since all of you guys have visited the zoo right?

Learners: Yes

Researcher: Can you tell me what did you enjoy about the zoo, the last time you were there? Learner I you want to start? Okay learner H yes?

Learner H: What I enjoyed the most is seeing snakes I was scared of snakes but now am not afraid anymore.

Researcher: Mm okay, anyone, what did you enjoy at the zoo, yes learner F?

Learner F: I enjoyed that some snakes they don't kill other people they are just poison

Researcher: They are just poison, they do not kill other people neh, okay anyone, what did you enjoy at the zoo the last time?

Learner F: Enjoyed because it tells us that about how dangerous snakes can be

Researcher: How dangerous what?

Learner F: Snakes

Researcher: Snakes can be neh, yes learner I?

Learner I: I loved reading about museum because it tells us about people who were judged by white people

Researcher: So, you loved the museum more than the zoo neh?

Learner I: yes

Researcher: Okay thank you, learner G?

Learner G: Enjoyed, I enjoyed playing with elephants

Researcher: You enjoyed playing with elephants neh, okay. Okay since you guys did go to the zoo, what is it



that you didn't enjoy, you went but doing this wasn't nice, yes learner J?

Learner J: Elephants rides

Researcher: Elephant rides, what's happening in elephants' rides?

Learner J: You have to ride an elephant

Researcher: You had to ride an elephant oh ... okay and others what did you not enjoy, yes learner G?

Learner G: Seeing people carrying snakes

Researcher: Seeing people caring snakes neh, you did not like that neh

Learner G: Me too, I did not like that

Researcher: you too didn't like that neh, okay learner F is there something you did not like?

Learner F: I did not like when the lion when went out the cage and I thought that it would bite us

Researcher: Okay, learner I

Learner I: Uhm...

Researcher: You don't remember neh, so it means you did enjoy everything, or you didn't enjoy anything

Learner I: I enjoyed

Researcher: you enjoyed?

Learner I: Yes

Researcher: Okay what is the most memorable thing you remember amongst everything, yes learner J?

Learner J: I remember a train it was going in front of snakes

Researcher: A train that goes in front of snakes, learner I?

Learner I: I enjoyed playing games

Researcher: You enjoyed playing games?

Learner I: Yes

Researcher: okay learner I. Learner H?

Learner H: I remember my cousin falling after, after an elephant that ran over?

Researcher: Okay learner F

Learner F: I remember the day that my sister was carrying a banana and a monkey arrived and took it

Researcher: Learner G is there something you remember?

Learner G: I don't remember anything.

Researcher: You don't remember anything okay that's not a problem. Okay, how do you feel about the zoo in generally, how do you feel about going to the zoo? Yes, learner F?

Learner F: I feel very excited because I learn more things, more things than what I see in the books

Researcher: okay you learn more things neh

Learner F: Yes.

Researcher: Okay learner H?

Learner H: I learn more things that I didn't know about animals

Researcher: okay, you learn more things, another one? How do

you feel about the zoo in generally? Yes, learner J

Learner J: I feel safe than ...

Researcher: You feel safe. Okay, learner G?

Learner G: I feel; I feel happy because I gained more knowledge about many animals

Researcher: mm okay learner I is there something that you feel, or it is the same? How does it make you feel, excited, sad, or bored?

Learner I: it makes me excited

Researcher: Makes you excited neh, okay, we are almost done. What do you guys think you'll do at the zoo, you go to the zoo the moment you arrive what do you think you'll do, yes learner I

Learner I: We going to learn more about animals

Researcher: you feel like when you arrive you'll learn more about animals, another one, learner H?

Learner H: I think we going to learn because those animals they want us to learn more about animals

Researcher: okay, yes learner F?

Learner F: I think we going to learn how dangerous are the animals

Researcher: How dangerous are the animals, another one? Learner G

Learner G: I think we going to learn that other animals are dangerous others are not dangerous

Researcher: okay, learner J

Learner J: we going to learn about how silly animals can be

Researcher: how silly animals can be okay, what do you think your teachers will want you guys to do? Yes, learner G

Learner G: They'll want us to behave

Researcher: they'll want you to behave neh, okay another one. Wait, what is behaving, behaving how? Yes, learner I, yes learner J?

Learner J: I think teachers will be happy when we can be safe

Researcher: they'll want you to be safe, yes learner H?

Learner H: I think teachers will be happy because, they'll want us to be happy because will learn more about their subjects and this animal

Researcher: Mm... okay learner F?

Learner F: I think the teachers will be happy because we will learn more about animals

Researcher: Mm okay, learner I

Learner I: Aahh... same answer

Researcher: same answer as learner F?

Learner I: Yes

Researcher: Okay cool. What about you, what do you want to do when you get to the zoo, you told me that teachers will want you to learn about different animals. Maybe you want to go to the swing when you get there, what do you want to do, yes learner H?



Learner H: I want to learn how to be safe around the lion.

Researcher: You want to learn how to be safe, another one what do you want to do, yes learner G?

Learner G: I want to learn how to be safe around a lion, learn if the lion is herbivore, carnivore or omnivore. I think we are going to learn that other animals are dangerous, and others are not dangerous.

Researcher: You want to learn to carry a snake, mm ... another one, what do you want to do when you get to the zoo?

Learner F: I want to learn new animals that I am not familiar with especially animals that only eat meat. I also want to learn how to take care of different animals and how to take care of their habitats.

Researcher: Mm ... thank you learner F, yes learner J?

Learner J: I want to learn more and more about snakes

Researcher: More about snakes neh, okay learner I?

Learner I: I am expecting to go to the zoo and learn about different reptiles such as snakes specifically cobras and find out which ones are dangerous.

Researcher: Okay why is your class going to the zoo, you guys have classmates right?

Learners: Yes.

Researcher: Why are they going to the zoo

what are they saying?  
Learner H?

Learner H: It is because they want to learn because in the class they disrespect teachers ...

Researcher: Okay

Learner H: ... and do things that are not allowed

Researcher: Okay learner J?

Learner J: They want to be happy

Researcher: They want to be happy

Learner J: to have stress

Researcher: Not to have stress neh

Learner J: Yes

Researcher: Okay, learner F?

Learner F: I think we are going out to the zoo because some other learners do not know how to handle animals.

Researcher: Mm okay, learner I? you don't know still thinking neh, okay. How do you feel about animals? Yes, learner F?

Learner F: I feel happy because our animals are kind and they do not hurt you

Researcher: Okay, learner H?

Learner H: I feel safe around them because some animals if, aahh if they see you they don't just see a person they see a meat and will want to eat or hurt you

Researcher: Mm ... another one how do you feel, you love or you hate them

Learner I: Hate it, I really, really hate a snake

Researcher: You really, really hate a snake learner I neh, thank you. Yes, learner J?

Learner J: I hate a lion

Researcher: You hate a lion, okay learner G?

Learner G: I hate a snake.

Researcher: You hate a snake neh, okay. What animals do you guys want to see and why? Learner H?

Learner H: I want to see a giraffe because I want to see how tall it is.

Researcher: How tall it is, okay learner F?

Learner F: I want to see an elephant that, that it can run like in the movie I see

Researcher: Mm okay thank you learner F, another one what animal do you want to see and why, learner I?

Learner I: I want to see a monkey because it's my favourite animal

Researcher: You want to see a monkey because it's your favourite animal okay, learner J?

Learner J: I want to see a bluebird

Researcher: You want to see a bluebird, why?

Learner J: because it is my favourite

Researcher: It is your favourite animal, okay learner G?

Learner G: I want to see a lion

Researcher: Mm a lion, why you want to see a lion?

Learner G: I want to see ...

Researcher: You still thinking, okay. You guys know science right.

Learners: Yes

Researcher: You are doing natural science and technology right?

Learners: Yes

Researcher: Do you know people who are working in science what kind of a job their doing?

Learners: Yes

Researcher: What kind?

Learner F: They travel to space

Researcher: Travel to space. Others?

Learner I: They trade with other countries

Researcher: Trade with other countries, yes.

Learners: The same mm

Researcher: They same neh, yes.

Learner G: Some do engineering.

Researcher: Some do engineering, yes, some be doctors, some do nurses, some become IT specialists, do you know it? They work with computers.

Learner S: Yes

Researcher: Its science work. So my question to you is do you guys when you grow up want to work in science

Learners: Yes

Researcher: Yes why? Is there anyone or two who can tell me why they feel like they want to work in science. Can be one or two people. Learner H you've raised your hand



Learner H: It is because I want to learn more about being a scientist worker than I learn in the books

Researcher: Okay guys thank you, oh yes learner J?

Learner J: Because being a daughter

Researcher: Doctor

Learner J: Doctor involves science

Researcher: Involves science.

Pre-interview (Drawings)

Researcher: Okay guys, I gave you papers and said you should draw your favourite animal for me, so tell me what have you drawn? Learner I. what have you drawn for me?

Learner I: Monkey.

Researcher: Okay monkey why?

Learner I: because it is very funny, and it makes us laugh.

Researcher: Oh, it makes you laugh, okay. Learner J?

Learner J: Bluebird, I love its colours.

Researcher: Oh okay, learner F what have you drawn?

Learner F: Cat

Researcher: Cat, why?

Learner F: I love how they are able to climb trees.

Researcher: Oh, interesting okay, learner H?

Learner H: Cat, they are one of the fast animals in running.

Researcher: Oh .. yes okay. Learner G?

Learner G: Cat also?

Researcher: Cat also, okay why?

Learner G: I love them.

Researcher: Okay thank you guys, thanks a lot.

Post-interview

Researcher: Okay guys you are welcome for our second interview and it's going to be very fast, okay question number one what did you guys enjoy the most at the zoo and how was the visit to the zoo, learner I?

Learner I: To see a snake.

Researcher: To see a snake neh, okay learner H?

Learner H: I enjoyed saying a leopard

Researcher: okay, you enjoyed seeing a leopard, learner F

Learner F: I enjoyed seeing a lion

Researcher: You enjoyed seeing lion, okay nice learner J?

Learner J: I enjoyed viewing snakes in their glasses with my group. There were different snakes and some of my group members were scared. I wanted to touch the snakes, especially the big yellow one with white lines.

Researcher: You enjoyed seeing the snake live, seeing there's a snake. Okay learner G?

Learner G: I enjoyed seeing a snake

Researcher: Okay, what did you not enjoy with the trip, thinking this bored me.

Learner F: There's non

Researcher: Learner F nothing, learner H you too?

Learner H: Yes

Researcher: Learner G same answer

Learner G: Me too

Researcher: All of you same answer. So there's nothing you did not enjoy, you enjoyed everything regarding the trip?

Learners: Yes.

Researcher: Okay and maybe if they say to you we are going back to the zoo, but before going back what's that thing you feel like you should do you didn't do at the zoo the last time, learner I?

Learner I: To go to the museum.

Researcher: To go to the museum, you prefer not going just go straight to the zoo?

Learner I: No

Researcher: Mm...

Learner I: They should have cancelled union buildings and we went to the museum

Researcher: Okay cancel union building, and you go to the museum. Okay, learner F?

Learner F: I wish we could climb rides

Researcher: Rides okay, learner H?

Learner H: I wish they could be a merry go round

Researcher: Okay nice.

Learner: I agree with learner I

Researcher: You agree with learner I neh, learner G

Learner G: I want to see the birds

Researcher: If only they gave you a chance to see the birds. Okay what did you learn at the zoo, you from the zoo, what did you learn, learner H?

Learner H: I have learnt that a lion is a very dangerous animal hence it is kept far from other animals. I also saw that a lion was given meat only unlike a giraffe which was given grass. Our teacher explained that it is because a lion only eats meat.

Researcher: Okay, yes learner J?

Learner J: I learnt to not kill animals but keep them safe

Researcher: To keep the animal's safe, learner I?

Learner I: (Laughing)

Researcher: Still thinking, others?

Learner H: still thinking

Researcher: You also are still thinking, what have you learnt we from the zoo what is it that you learnt you didn't know.

Learner H: We should have another trip in September.

Researcher: They should take you on another trip also learner H, go back? What have you learnt, you didn't learner anything, learner G?

Learner G: I saw different snakes at the zoo. Some were big and some were tiny. The teacher at the zoo told us that snakes only eat animals and it depends on the type of a snake.





Researcher: Okay, learner I?

Learner I: I learned that snakes can eat animals like worms, frogs or even rats. Our teacher refers to such animals as carnivores.

Researcher: Okay, what did you learn? Learner F

Learner F: I was just enjoying the vibe

Researcher: You were having fun, like it was different than being at school

Learner F: Yes, it was really nice there.

Researcher: There's a difference than being in class and your teacher is teaching, learner I?

Learner I: I've learnt in the union building

Researcher: Okay.

Learner I: That..... uuhmmm leaders ...

Researcher: Who are leaders, presidents?

Learner I: uuhhhmm..

Researcher: Okay learner I while you are still thinking learner H?

Learner H: I learnt more about Khoisan people

Researcher: Oh... okay

Learner I: I wanted to say that

Researcher: You wanted to say that learner I? That you've learnt about Khoisan people. Okay and then what are things you wanted to do but you never did them, but what are those things you wanted to do, yes learner J?

Learner J: To feed them

Researcher: To?

Learner J: Feed them

Researcher: To feed them, oh nice you wanted to touch them, okay learner H?

Learner H: Wanted to touch them

Researcher: wanted to touch, some animals at least, okay.

Learner H: Especially a snake.

Researcher: Especially a snake, others what is it you wanted to do but you didn't, yes learner J?

Learner J: To put a snake in a net.

Researcher: to put a snake in a net you wanted to do that.

Learner J: Yes.

Learner G: To see the dragons

Researcher: To see the dragons.

Learner G: The dragons were too small.

Researcher H: The dragons were too small.

Learner F: I wanted to see a lion cub.

Researcher: Oh... okay. So guys are there things you want to go back and do or see also, yes learner J?

Learner J: I'll like to see an Okapi

Researcher: You want to see what?

Learner J: Okapi

Researcher: What's an Okapi?

Learner J: Mixture of zebra and springbok.

Researcher: Mm okay nice, learner H?

Learner H: ill like to see a rhino

Researcher: A rhino neh, okay. Learner F?

Learner F: Ill like to see a gorilla because I didn't see it, it was sleeping.

Researcher: Oh... learner I?

Learner I: Chimpanzee

Researcher: Chimpanzee neh, okay learner G?

Learner G: Ill like to see dragons because I haven't seen them before.

Researcher: Oh. You haven't seen them. So how do you feel about animals, you are from the zoo right, so now how do you feel about them? Learner H?

Learner H: I feel safe around animals.

Researcher: You feel safe when you around animals, others?

Learner J: I feel happy

Researcher: You feel happy learner J, okay others?

Learner F: I feel nervous around the lion.

Researcher: You feel nervous neh, okay learner F others?

Learner I: I feel nervous because when you are near a cage of tigers, that thing it was loose

Researcher: Okay, its loose so you were scared if it does get out here

Learner F: but at least the was a gap so the was no way it could jump

Researcher: The was a what?

Learner F: A gap.

Researcher: A gap between, so even if it

was loose at least there's that gap, okay.

Learner I: but some, a white tiger did go under

Researcher: White tiger? Oh... which animal did you enjoy seeing and why? Yes, learner J?

Learner J: Camel

Researcher: A camel, why?

Learner J: I thought camels lives in desert

Researcher: Oh so you were surprised that there's a camel here, nice others, what did you guys enjoy seeing?

Learner J: I enjoyed to see a central python, I wanted to see how big it is.

Researcher: How big it is neh, okay learner I, others? Yes, learner H?

Learner H: ill like, what I enjoyed the most is seeing the central snake because I thought it lives on the desert

Researcher: Mm okay nice, others, learner G?

Learner G: I enjoyed seeing a naughty, naughty monkey

Researcher: Naughty monkey why?

Learner G: It made itself to smell.

Researcher: Serious, okay learner F?

Learner F: I enjoyed seeing the crocodile, it pretended like it was asleep, but no it wasn't, so some child wanted to go in and take money that was there, it woke up and

Researcher: lyoh, it opened its eye



Learner F: Yes, it was big

Researcher: The crocodile

Learner F: Yes, the was a R1 and that child wanted to go and take it

Researcher: Iyoh that child though.

Learner: Yes, it was too big.

Researcher: Okay, last time we talked about people who are working in science you remember?

Learners: Yes

Researcher: Like maybe working in zoo and what also?

Learners: Doctor, engineers,

Researcher: Yes, and nurse. So my question and still asking you, would you love to work in science?

Learners: Yes

Researcher: Why? Learner H?

Learner H: because I've learnt more about it and things I didn't know.

Researcher: Okay, learner F?

Learner F: Ill like to work in science because Ill like to be a doctor because so many people are suffering so ill like to help them

Researcher: Okay nice, others?

Learner G: Ill like to be a doctor.

Researcher: Learner H?

Learner G: Ill like to be a doctor

Researcher: Why?

Learner G: ill like to help other people.

Researcher: You want to help other people, okay only you two boys are left

Learner J: Same answer.

Researcher: Same answer learner J, same answer as learner F, learner I what are you saying

Learner I: Same answer.

Researcher: How was the visit to the zoo?

Learner F: I felt happy to see animals at the zoo because most animals are kind and they will not hurt you if you do not hurt them. I have learnt that snakes are more afraid of us as we are afraid of them and not all snakes are poisonous.

Learner J: My trip was good. Animals at the zoo were really beautiful. I want to go back soon.

Learner G: I do not remember.

Learner I: It was good.

Researcher: Same answer? Never, no learner I, why you want to work in science.

Learner I: Ill love to learn more about science.

Researcher: You want to learn more about science, is science nice, natural science?

Learners: A lot.

Researcher: A lot neh, when you go to the zoo and see what you learn in class is it the same thing?

Learners: Yes, some, like animals, carnivores.

Researcher: Carnivores, so you guys are able to see that's a carnivore

Learner f: Yes, and herbivores.

### Post-interview (Drawings)

Researcher: Okay. Learner I what have you drawn and why?

Learner I: I've drawn a cobra because it's my favourite snake.

Researcher: Because it's your favourite snake okay, learner J what did you draw and why?

Learner J: I've drawn a lion because it was so big

Researcher: It was so big.

Learner J: I thought it was just, small.

Researcher: Oh you thought it was small, okay learner H what did you draw and why?

Learner H: I've drawn a Centralian python because it's my favourite snake.

Researcher: It was your favourite snake, okay. Learner G what did you draw?

Learner G: I draw a leopard because I love it.

Researcher: You draw a leopard because?

Learner G: Because I love it.

Researcher: Oh you love it, okay learner F what did you draw?

Learner F: I draw a giraffe because I didn't think it was that tall.

Researcher: It was that tall right okay. Thank you, guys, thank you very much.

### TEACHER

#### Pre-interview

Researcher: So, Mem Zwane how long have you been teaching?

Mem Zwane: I started teaching in 1988

Researcher: Okay that's long. What grades do you teach?

Mem Zwane: I started in high school for four years then I came here.

Researcher: You came to primary school. What were you teaching in high school?

Mem Zwane: I was teaching science, natural science

Researcher: life science?

Mem Zwane: General science.

Researcher: Okay.

Mem Zwane: So, here am doing natural science.

Researcher: Natural science, okay. So, when you started teaching you've been teaching the same subject you are teaching now?

Mem Zwane: I've been teaching the same subject.

Researcher: You've been in the science subject.

Mem Zwane: Yes, I've been in the science subject.

Researcher: Okay, so normally when you take kids to the zoo, do you choose if you are taking those who are doing natural science, life science when you were in high school general science or do you guys say all kids are welcome.

Mem Zwane: Normally when we take kids to the zoo, we cater for the





theme that will be doing like what are we going to cover

Researcher: Okay.

Mem Zwane: but sometimes it happens that we go for something that will be teaching later on, or something that we've already taught, like now we going to the zoo, I think now we have to work with plants because term one will be doing life and .. life and ..

Researcher: Living.

Mem Zwane: Yes, life and living. So now we are doing something different I don't think it'll be catering for, I think they just have to see what it is that we've learnt

Researcher: we've learnt, it's like they have to look at what is it they've learnt

Mem Zwane: yes, yes, especially grade 6 and 4 to grade.

Researcher: Okay. Do you guys ever say we are taking kids who are doing science only?

Mem Zwane: No, we take all the kids, each and every teacher says this will help me here and there

Researcher: So, it's not for fun?

Mem Zwane: No, no because even them do carry notebooks.

Researcher: Okay

Mem Zwane: so, when we arrive at the Zoo, those guides what do we call them, yes tour guides

Researcher: Yes, yes

Mem Zwane: they take them and teach them, so they take notes and

collect information when we come back probably their things we need to work on.

Researcher: You've already answered me but am going to ask again, what are the reasons to take kids to the Zoo?

Mem Zwane: I am hoping that my learners would learn what are herbivores, carnivores and omnivores. I also hope that they would learn how to different herbivores, carnivores and omnivores when they see them at the zoo.

Researcher: Yes

Mem Zwane: we go there so that they could learn most of the time.

Researcher: What preparations have been done in class for the zoo visit?

Mem Zwane: I have prepared a lesson to present to my learners. My lesson is based on encouraging my learners and motivating them to bring notebooks to the zoo.

Researcher: Have you visited the zoo prior to the visit and prepared any worksheets?

Mem Zwane: No, I have not done that, I already know the zoo. No, but a lesson will be presented.

Researcher: Okay. What are your views for learners learning at the Zoo, what are your views, do they learn or no?

Mem Zwane: I enjoy it a lot, if it was up to me and I had a certain topic, I was going to prepare learners, organize a transport so that they could go and see that

Researcher: Okay.

Mem Zwane: so that they can be taught by those people, I remember last time the was a lady who took us, when the was something we needed to do she'll go, and kids will see it practical and do it

Researcher:

Mem Zwane: children will enjoy. If maybe there were things, we needed to do in water will go and see them

Researcher: Mmmm

Mem Zwane: and she'll explain everything to them

Researcher: Mmm .. okay. What do you think kids enjoy the most at the Zoo?

Mem Zwane: Some just enjoy outing.

Researcher: Like it's a school trip

Mem Zwane: Yes, school trip to others, others are the first time going out in a bus, some will carry this kind of chocolate, they'll carry plenty

Researcher: Ohh ...

Mem Zwane: some enjoy just to go and see things we talk about in class they don't see, because we do talk about it in the textbook, so when they see them with their naked eyes, they are even able to ask questions. Their able to point out different kinds of birds, monkeys.

Researcher: what do you think they do not enjoy at the Zoo?

Mem Zwane: I don't think there is especially these one, they enjoy mostly getting money from their parents,

pocket money, so that they can buy chocolate, sweets.

Researcher: So mostly when they get to the Zoo what do they do mostly?

Mem Zwane: They start by grouping them, actually they learn first then later on they play, but they take them to see different things that are there like animals

Researcher: so, they control them and tell them what to do, so If there's no tour guide anymore what do they?

Mem Zwane: If we are done learning that's when we say they can go and play.

Researcher: So, is there a change of behaviour from before going to the Zoo and after?

Mem Zwane: I think in terms of when we have activities

Researcher:

Mem Zwane: they are able to relate, like this one we have seen and all. Some don't even know what carnivores are, what are herbivores, so when they see what is being fed to the lions, what is it that monkeys eat

Researcher:

Mem Zwane: You can ask them now what herbivores are, what are Omnivores they won't tell you until they come back from the Zoo

Researcher: but when they come back there's some difference

Mem Zwane: Yes, difference is there to those who went and actually listened.

Researcher: Okay Mem Zwane thank you that's the end.



Post-interview

Researcher: I only have six questions Mrs. Zwane which the first question is what you thought kids enjoyed the most at the zoo as you from the zoo

Mem Zwane: I think they enjoyed everything because they were like willing, to, to be taught something, willing to hear, willing to see. You know what they did when we were supposed to go and have fun they just left us there

Researcher: OH. Okay

Mem Zwane: we asked where are the kids they say kids left saying they cannot wait, we asked them what did you see, they said they saw a gorilla and it broke something, not sure if it was true, we went to left them, probably they thought we are wasting their time

Researcher: time

Mem Zwane: yes, because they were like the want to see what's in this place

Researcher: okay, what's something you think they did not enjoy?

Mem Zwane: Aahmm I didn't see anything they didn't enjoy, because everything they saw they were amazed

Researcher: yes

Mem Zwane: even when we were supposed to go, they complained

Researcher: Oh....

Mem Zwane: and we told them remember the will be traffic and we arrived late

Researcher: oh...yea and its far

Mem Zwane: some even went to sleep at teacher's place, parents could fetch them because of transport. They enjoyed almost everything

Researcher: wow

Mem Zwane: as for food they didn't care about food they ate quick, quick and already in the bus they started eating so when we got to the zoo they were already full forgetting that we came to learn

Researcher: Do you feel that they've learnt at the zoo?

Mem Zwane: During the zoo observations, learners left us teachers and went to have fun while viewing animals. We asked them later why they left us, they said they could not wait. Learners said that they were excited to go see animals they learnt about in class and during their zoo lecture. They looked excited and amazed. They were explaining what they saw with excitement.

Researcher: What would you say are your views on learners' learning at the zoo?

Mem Zwane: Learners have learned a lot at the zoo and gained knowledge. In the activity I gave the learners after the trip, most of them got the answers correct. I was even impressed by my slow learners who were able to elaborate on what they saw and learned at the zoo. In the activity I gave the learners, they were ticking herbivores, carnivore and omnivores, I was impressed when my smart learners added

more animals in the "other" box.

Researcher: so, do you think going to the zoo does change the way they see science

Mem Zwane: I think it does because some of the things that was already covered the were not able to see them, some of the questions were already being answered there, saying this one is like this and all that, even them even said this is the one ...

Researcher: Ohwo ..

Mem Zwane: ... you can tell their talking about the ones we've already studied, it's the one our teacher was talking about.

Researcher: what's one activity you think they enjoyed amongst them all, one they didn't stop talking about it or going to it

Mem Zwane: thing is we didn't really go with them together, but I think where the was tiger and snakes they really did enjoy

Researcher: they enjoyed those a lot neh

Mem Zwane: yes, and snakes also

Researcher: okay. What's one thing you'll change about going to the zoo next time if you plan?

Mem Zwane: I think I'll change time, we shouldn't go late, because when we get there late some animals, we can no longer see them, we can only see it when we get out

Researcher: Okay.

Mem Zwane: the only thing we saw was an elephant

Researcher: so it means if you get there on time you'll see everything

Mem Zwane: yes, if we try to be there as early as we could so that children can see more

Researcher: Okay thank you.

SCHOOL C

LEARNERS

Learners' responses translated from Sepedi to English

Pre-interview

Researcher: Okay guys how are you?

Learners: Were fine.

Researcher: You're fine neh? Okay my first question am going to ask you is, what is your age, how old are you. Yes, learner O?

Learner O: eleven

Researcher: Eleven okay.

Learner: O Twelve

Researcher: Twelve. Oh okay. Twelve. Learner N.

Learner N: Twelve.

Researcher: twelve, okay learner M?

Learner M: Eleven.

Researcher: Eleven okay learner L?

Learner L: Twelve.

Researcher: Twelve, okay learner K?

Learner K: Eleven.

Researcher: Eleven okay. Thank you very much and then, are you a female or male? Female means you are



a girl male means you are a boy. Learner O.

Learner O: Aahh female (laughing)...no male.

Researcher: Okay male. Learner N?

Learner N: Male

Researcher: Male, learner M?

Learner M: Male.

Researcher: Male, learner L?

Learner L: Female?

Researcher: Female, learner K?

Learner K: Female.

Researcher: Female. Okay which grade are you in? learner N?

Learner N: 7.

Researcher: grade 7, learner K?

Learner K: Grade 5

Researcher: grade 5, learner M?

Learner M: Grade 5.

Researcher: grade 5, learner O?

Learner O: Grade 7.

Researcher: learner L?

Learner L: grade 6

Researcher: Grade 6 okay thank you. Have you ever failed grade? We do not laugh at each other. I'll ask you to have you ever failed a grade, have you ever repeated a grade? Learner O?

Learner O: no

Researcher: no, learner N?

Learner N: no

Researcher: no, learner M?

Learner M: no

Researcher: no, learner L?

Learner L: no

Researcher: no, learner K?

Learner K: no

Researcher: no, okay so you are smart. What is your favourite subject and why? Learner O?

Learner O: math's

Researcher: why math's?

Learner O: because I like calculating

Researcher: you like calculating neh, so you love adding 1+1 2+2

Learner O: yes

Researcher: oh. Okay, another one, learner N?

Learner N: NS

Researcher: why?

Learner N: because you know many things

Researcher: you know many things neh, they teach you many things. Okay another one, yes learner M?

Learner M: English

Researcher: why?

Learner M: it teaches you to read

Researcher: it teaches you to read neh, so even when you are at home you can take a newspaper and read neh

Learner M: yes

Researcher: okay, learner L?

Learner L: NS

Researcher: why?

Learner L: I like when they teach us about animals

Researcher: when it teaches you about animals neh, okay learner K?

Learner K: NST

Researcher: why? you love the teacher?

Learner K: yes

Researcher: okay so the teacher makes you love NST neh

Learner K: yea

Researcher: okay, so my next question is, have you ever visited the zoo before? If you have how many times if you remember. Learner O?

Learner O: I've visited the zoo 3 times, as we are going now it'll be the 4<sup>th</sup> time

Researcher: four, okay. Learner N?

Learner N: yes

Researcher: how many times?

Learner N: one

Researcher: once neh, as you are going now it'll be twice neh

Learner N: twice

Researcher: learner M?

Learner M: one time

Researcher: Only one-time neh, so when you going now it'll be second time?

Learner M: yes

Researcher: okay nice. Learner L?

Learner L: two times

Researcher: two times, so when you go back now it'll be 3 times

Learner L: 3 times

Researcher: 3 times okay, learner K?

Learner K: one.

Researcher: so now it'll be two times. Okay. Since you guys all of you did go to the zoo, what is it that you remember the last time, which you loved, one thing you enjoyed last

time you were there, you were like iyoh at the zoo it was nice because we did 1 2 3 or we did 1 2 3. Learner O?

Learner O: reason I loved the zoo was because I saw a giraffe and it made me to be encourage because of the way it is.

Researcher: because it was tall

Learner O: yes

Researcher: and that was okay. others? Learner N?

Learner N: eish....

Researcher: oh you didn't love anything the last time you were there

Learner N: it's been long

Researcher: it's been long neh? no.... the last I visited the zoo maybe I was like 10 years old but even now I do remember what I loved, mmm so it means there's nothing you did enjoy because you did not enjoy to that extend. Okay. So tell me what is it that you did not enjoy then, the last time you were there, what bored you? learner O?

Learner O: Crocodile was hiding itself, so I was not happy.

Researcher: because it was hiding itself neh. Learner L

Learner L: hmmm

Researcher: you don't remember neh, okay while you're thinking learner N?

Learner N: There's a yellow snake they said its sleeping because it just ate, we went back but it was still sleeping

Researcher: serious, so you guys never saw it like, so that it stands, and you see the face and everything



Learner N: yea  
Researcher: okay learner M?  
Learner M: walking around  
Researcher: to?  
Learner M: walk  
Researcher: walk around, that was boring neh? because normally they'll be guards who'll be busy moving around with you guys telling you, come this side go that side, so that was boring neh?  
Learner M: yes  
Researcher: okay others? Nothing so far? okay no its fine we can pass. So my next question is that what do you remember about the zoo, maybe the gate was big or the were many people? what is it you remember about the zoo last time you were there?  
Learner O: I remember the was this big hole and it was filled with water and money, I see like that animal lived in there was very (can't hear)  
Researcher: Oh so the was an animal living in that hole?  
Learner: yes  
Researcher: Okay others? what do you remember at the zoo, yes learner M  
Learner M: I saw a leopard  
Researcher: oh okay was it beautiful, was it big?  
Learner M: Big  
Researcher: you saw it while far or nearby  
Learner M: nearby  
Researcher: nearby, so wasn't it scary  
Learner M: it was scary

Researcher: lyoh I can imagine a leopard, others?  
Learner L: I saw a lion roaring  
Researcher: you saw a lion doing?  
Learner L: roaring  
Researcher: serious? so didn't it scare you?  
Learner L: no  
Researcher: You are strong learner L. Others? it was long neh, you don't remember. Okay no its fine. So how do you feel about the zoo generally, when I say how I mean do you guys love it or its fine, or I love it because they going to give me more pocket money, or am going because my friends are going, how do you feel about the zoo  
Learner O: I feel that it's nice because we go with our friends and it's going to be safe because they'll be guards  
Researcher: Okay, others, learner L?  
Learner L: I feel okay because they'll be teachers guarding us and they won't be anyone getting lost, all of us will come back  
Researcher: ohh okay thank you learner N, others how do you feel, you like it, or you do not like it? yes learner M?  
Learner M: I feel that we going to see animals  
Researcher: you going to see animas neh, so is that nice or no?  
Learner M: it's nice  
Researcher: is that nice  
Learner M: yes  
Researcher: others are afraid of seeing animals which is not nice

Learner M: like snakes  
Researcher: like snakes...  
Learner K: giraffes  
Researcher: you were talking about a leopard which is scary, okay so in general you guys feel nice?  
Learners: yes  
Researcher: okay, okay. We are almost done So according to you what do you think you'll do when you get to the zoo, are you going to sit with your teachers so they talk to you, what is it you going to do? yes learner L?  
Learner L: we going to see animals  
Researcher: you think you going to see animals neh  
Learner L: yes  
Researcher: others, yes learner O?  
Learner O: take pictures with my lovely animal giraffe  
Researcher O: take pictures with?  
Learner O: my .....  
Researcher: your giraffe?  
Learner O: yes  
Researcher: mmm okay others? yes learner M?  
Learner M: We are going to see our teachers telling us not to run around.  
Researcher: mmm they going to tell you that neh  
Learner M: yes  
Researcher: that don't run around, if your teacher is here you supposed to be here also. Learner K, what do you think you'll do?  
Learner K: we going to see the animals.

Researcher: you going to see animas neh, okay nice, learner N?  
Learner N: we going to walk in groups...  
Researcher: you going to walk in groups  
Learner N: when one group returns others go  
Researcher: Oooohh you are given time that now you go see lions  
Learner N: yes  
Researcher: .... now you go see snakes, you don't go all together in one place  
Learner N: yes  
Researcher: okay and then ahhmm okay fine, you already told me what you going to do right?  
Learners: Yes  
Researcher: when you think about it, what do you think your teachers will want you to do, when you get to the zoo?  
Learner O: they'll want us not to make noise and go around and litter so it gets dirty, insults one another and fight things like that.  
Researcher: Okay thank you learner O, others? what will the teachers say? Yes, learner M  
Learner M: to be well behave, don't throw things and make noise  
Researcher: don't make noise, when the whole group goes this direction and you go alone.  
Learner M: yes  
Researcher: okay, learner N  
Learner N: we shouldn't eat they'll give us time for a break  
Researcher: oh you shouldn't eat they'll give



you time to eat, you find that they say you going to see animals you are busy eating, they'll give you time now it's time to eat

Learner N: yes

Researcher: okay learner K? what would your teachers want you to do?

Learner K: do not walk far

Researcher: do not walk far neh, be nearby. Learner L?

Learner L: To go with them to see animals

Researcher: ooh to go with them neh, okay nice. You then what would you like to do, you were telling me what your teachers want right, what about you, if you were able to you, to tell your teachers, sir I want to do this and that and that.

Learner L: yes.....

Researcher: what is it you'll want to do, we all hear Sesotho right

Learners: yes

Researcher: what do you want to do, when you get to the zoo, you'll just sit down and talk to your friends, or they should let you talk to your friends, go buy, eat your lunchbox, what do you want, talk to me, learner O?

Learner O: I want us to arrive there happy, seeing animals, going with the same pace, do not fight all beautiful things.

Researcher: beautiful things only my boy?

Learner O: yes, mem

Researcher: nice, others what do you want to do learner N?

Learner N: so that a person shouldn't run

around while we are, she/he's over there, or when we leave, she/he goes over there...

Researcher: ...mmm...the shouldn't be someone who misbehave

Learner N: .... or when he sees others he knows he goes to them

Researcher: oh yea go to them while they do not attend the same school with them

Learner N: yes

Researcher: so that we all be same neh

Learner N: yes

Researcher: learner L?

Learner L: To listen to the teachers when they say we do not go to that place

Researcher: Nice, nice learner L. Learner K, what do you want to do?

Learner K: go with them everywhere they go, when they say let's go see that animal, we can go

Researcher: you go with them neh? And do you want to see animals, or water? do you want to see them?

Learners K: yes

Researcher: All of you?

Learners: Yes

Researcher: Serious?

Learners: Yes

Researcher: Okay, okay. You go to different grades right, some said 7, some said 6, what do you think your class will do, as you know how learners are, your classmates, what do you think they'll do, learner M?

Learner M: they'll want to see animals

Researcher: they'll want to see animals neh, okay.

Learner O: mem, my class is very corrupted, so I feel like they not going to do very well.

Researcher: Ohwo okay learner O, learner N?

Learner N: I think because my class has a lot of prefects, I feel like they'll lead the young ones.

Researcher: ohwo, okay, nice,nice,nice. Learner M?

Learner M: My class is troublesome they make noise grade 5d.

Researcher: They have to run after them neh, learner K?

Learner K: iyoh, even in class.

Researcher: Even if class they have to run after them, come and stuff neh. How do you feel regarding animals, you love them, you do not, you are afraid of them, you get irritated when you see them?

Learner N: we feel okay because we know them, we know what they eat and what they do not

Researcher: okay thank you learner N? others?

Learner L: we feel.... we feel....

Researcher: how do you feel?

Learner L: we feel happy seeing them

Researcher: you are so happy when you see them neh

Learner L: yes

Researcher: okay learner L, others?

Learner O: am also seeing them, since last of last year I've went

Researcher: oh...since it's been a while you went neh,

Learner O: yes

Researcher: okay nice learner O, learner K, how do you feel about animals, you want to see them?

Learner K: yes

Researcher: you won't be scared when you see them and cry

Learner K: no

Researcher: okay, learner M?

Learner M: I want to hold them....

Researcher: Ooohh

Learner M: only the beautiful ones

Researcher: what is it you want to hold?

Learner M: giraffe, elephant

Researcher: only?

Learner M: yes

Researcher: what about a snake?

Learner M: no

Researcher: so you guys they have never let you hold a snake before?

Learners: no

Researcher: have you may be seen somebody from a different school hold a snake

Learners: yes

Researcher: you have neh

Learners: yes

Researcher: maybe they'll allow you to hold it

Learner O: No its going to bite you

Researcher: (laughing) it'll bite you neh

Learner O: yes





Researcher: Okay, which animal do you want to see and why?  
Learner L?

Learner L: Lion

Researcher: why

Learner L: yes

Researcher: why lion?

Learner L: because I like them roaming around where they live

Researcher: okay nice, others what do you want to see, learner O?

Learner O: I want to see dolphins

Researcher: why?

Learner O: because I hear many stories about dolphins, when people are drowning and...

Researcher: so you want to see

Learner O: yes

Researcher: learner N?

Learner N: peacock

Researcher: peacock, why?

Learner N: many people say it's too beautiful

Researcher: it's too beautiful, so you want to see that prettiness then

Learner N: yes

Researcher: okay, learner M, what do you want to see?

Learner M: I want to see a giraffe going around, around

Researcher: plus, its tallness neh, you'll be uplifting your head to see it

Learner M: yes

Researcher: okay, and you learner K? what do you want to see?

Learner K: Lion

Researcher: why?

Learner K: ... uhhmmm

Researcher: you love it?

Learner K: No

Researcher: but you want to see it

learner K: yes

Researcher: okay, so my last question, actually second last because they'll be drawings and you'll tell me which animal you drew and why neh. Okay so there's science work, do you know that?

learners: yes

Researcher: you are studying natural science grade 7 and grade 6 its natural science and technology right

learners: yes

Researcher: you find that when you are n grade 12 you continue with science, when you do that you can become a doctor, nurse,

learner O: social worker

Researcher: maybe social worker, engineering maybe work at the mine, those things involve science, if you love natural science or natural science and technology, with technology also you can work at Vodacom did you know that? and become an IT specialist, you see IT specialists are those that deal with computers, you can also deal with computers. So my question is when you grow up and finish school, do you guys think you'll want to work in science?

learners: yes

Researcher: yes, learner O?

learner O: yes, I want to be a doctor

Researcher: you want to be a doctor?

Learner O: yes

Researcher: so definitely you'll work in science

learner O: yes

Researcher: others, learner M?

learner M: engineer

Researcher: engineer neh.

Learner M: yes

Researcher: okay learner K?

learner K: doctor

Researcher: you want to be a doctor neh, okay learner L?

learner L: Doctor

Researcher: Okay doctor neh, learner N?

learner N: I want to work at the Vodacom

Researcher: Ohh and be an IT specialists neh

learners: yes

[Pre-interview \(Drawings\)](#)

Researcher: Okay sharp so we are done, the only thing I'll ask is what did you draw for me and why, learner O? What did you draw?

Learner O: Giraffe

Researcher: Okay giraffe, why?

Learner O: It's very tall and I love to see a giraffe running and making a ....

Researcher: .... playing with the neck shaking the neck

learner O: Yes

Researcher: Okay thanks, learner N what did you draw for me?

Learner N: Lion

Researcher: Why lion?

Learner N: Because (can't hear) when it runs

Researcher: hhhmm okay learner M what do you draw for me?

Learner M: Lion

Researcher: why lion?

Learner M: because it's doesn't love to run around

Researcher: It doesn't love to run around right, it is quiet, it is behaved, and you love that okay please write on top it is a lion. Okay let's see what you drew for me.

Learner L: snake

Researcher: why a snake

learner L: because when I go to the zoo I want to see a snake

Researcher: you want to see a snake okay, uhhh while you are busy drawing learner K, what are you drawing for me?

Learner K: Dog

Researcher: why? because you love it?

Learner K: yes

Researcher: okay, thank you.

[Post-interview \(Drawings\)](#)

Researcher: Yeeeeeee listen to you. No thank you so much, I want you guys to tell me what you have drawn and why then we done. Learner O what have you drawn?

Learner O: Ostrich

Researcher: Why?

Learner O: Its funny how it runs, it makes me laugh.

Learner N: A duck



Researcher: Okay, why?

Learner N: Because it can stay both in water and outside

Researcher: Ohwo and you learner M? what did you draw?

Learner M: Lion.

Researcher: Why lion?

Learner M: it doesn't like to run around; it likes to sit down.

Researcher: Okay, learner L you?

Learner L: Cheater.

Researcher: You have drawn a cheater, why?

Learner L: because when we saw it, it was sitting.

Researcher: Learner K what did you draw this time?

Learner K: Snake

Researcher: Snake, why?

Learner K: Because I was attracted by its colours.

### Post-interview questions

Researcher: Okay guys how are you?

Learners: We fine.

Researcher: Sharp, okay I'll ask you about your trip, you went right?

Learners: yes

Researcher: you went to the zoo, but why does it seem like you not happy was it boring?

Learners: no.

Researcher: really? okay I want to know about your trip then, tell me then what did you enjoy about the zoo, how was the visit to the zoo? learner O?

Learner O: to see animals.

Researcher: to see animals, was it nice

Learner O: yes.

Researcher: okay, yes learner N?

Learner N: seeing my favorite animal.

Researcher: seeing your favorite animal, what's your favorite animal?

Learner N: Mm mm....

Researcher: what animal did you love?

Learner N: tiger

Researcher: tiger, mm okay others what did you love at the zoo?

Learner M: Me and my friends did not know or remember most animals except monkeys, lions and snakes. But we were scared of most animals.

Learner L: elephant

Learner K: I liked gorillas because they stay in the same place

Researcher: okay, were they many?

Learner K: the were 2 or 3

Researcher: Okay. What is it that you didn't like? Something that bored you, if there's any.

Learner O: I have always wondered what makes animals to eat what they eat. Why some animals eat meat, while others eat grass like a giraffe. And I also wonder where this grass come from.

Researcher: Okay, others, what didn't you like at the zoo?

Learner M: cheater, because it was sitting down.

Researcher: Okay, yes learner N?

Learner N: leopard was sleeping

Researcher: leopard was sleeping, and you wanted to see it?

Learner N: yes.

Researcher: okay, thank you learner L.

Learner L: penguins hiding

Researcher: penguins were hiding, okay thank you very much learner L. Learner K is there anything that bored you?

Learner K: No.

Researcher: Is there something you'll change regarding your trip, is there someone who says if only we arrived at the zoo at this time, or if only we did this, or saw this but we didn't see that or done that, is there something you'll change?

Learners: No.

Researcher: nothing, all of you?

Learners: yes.

Researcher: so, you telling me you were happy, with every, everything? Or maybe wishing that your family could have given you more pocket money. Okay, what did you learn? Yes, learner L

Learner L: I have learned how animals live at the zoo.

Researcher: Okay.

Learner O: I have learned that a leopard and springbok do not get along.

Researcher: Okay that's nice learner K, others what did you learn?

Learner K: how animals live at the zoo.

Researcher: How animals live at the zoo, how they live generally neh?

Learner K: Yes

Learner M: Leopard, when they are in the same place with springbok they do not get along

Learner N: other animals we didn't know.

Researcher: Animals you didn't know right? You can like see them, but was it frightening or exciting?

Learner N: It was exciting, but others were scary

Researcher: Others were scary, others were exciting.

Learners: Yes.

Researcher: Okay, okay. Is there something you wanted to do at the zoo but you didn't, something you wanted to see but you didn't see, maybe something you wanted to ride but you didn't ride?

Learner L: Riding cars.

Researcher: Okay that's nice, others what's something you wanted to do but you didn't do, and you came back saying eish only if I did this and that?

Learner M: They promised us that we going to come back from the zoo around 5 but around 3

Researcher: Around 3?

Learner M: they said we should come out and we waited outside for a long time waiting for the bus.

Researcher: You could have waited inside the zoo and you saw more of animals and things like that?





Other learners: We did not enjoy.

Researcher: Okay is there something you'll like to go back and see again, because seeing it made you enjoy it so you wouldn't mind seeing it again. Yes, learner M?

Learner M: I want to see flamingos again

Researcher: Okay nice, learner O you were saying?

Learner O: I want to see hyenas and sharks

Researcher: and sharks, aren't you afraid of them

Learner O: No

Researcher: Okay, others?

Learner N: I want to see fish and snakes

Researcher: Fish and snakes? You want to see them again and again, it doesn't even stress you, okay learner K?

Learner K: The white tiger we saw.

Researcher: Okay, since you from the zoo how do you feel about animal, what are your feelings regarding animals, yes learner L?

Learner L: I feel happy

Researcher: you feel happy neh, okay, others how do you feel regarding animals?

Learner O: I feel happy because when we were watching gorillas they would come near a mirror so that we can see them proper

Researcher: Wow learner O okay, others how do you feel about animals?

Learner L: I feel happy because it's rare you find them fighting, they just walk around

Researcher: They just walk around neh

Learner L: Yes

Researcher: Others, how do you feel about animals?

Learner K: Happy

Researcher: You feel happy? You love them?

Learner K: Yes.

Researcher: Okay thank you, learner M?

Learner M: Happy because the lions are eating meat and running around.

Researcher: That was nice?

Learner M: Yes

Researcher: Okay, which animal did you enjoy seeing and why? Yes, learner N?

Learner N: flamingos.

Researcher: flamingos why?

Learner N: because their pink I like pink colour.

Researcher: and they have other colours neh, flamingos

Learner N: Yes

Researcher: Okay nice another one, what did you love seeing at the zoo and why?

Learner L: Baboons because they stay together

Researcher: Baboons neh, okay nice? What did you enjoy seeing, learner K?

Learner K: All of them

Researcher: Oohh all of them, I thought you said thieves. You loved all of them, okay, you learner O?

Learner O: Hyenas because they love to go in groups and when

they sit down they sit in groups

Researcher: Oh so they walk in groups and when they sit down they all sit down in groups? Mm that was a nice observation, learner M?

Learner M: I enjoyed watching....

Researcher: Watching what?

Learner M: snakes

Researcher: You enjoyed watching them, while busy moving around?

Learner M: Yes

Researcher: weren't you scared?

Researcher: How was the visit to the zoo?

Learner N: I enjoyed seeing my favourite animal which is a tiger. Although tigers are dangerous, they are still beautiful.

Learner L: I was happy to see animals because most of at the time they do not fight like people.

Learner O: I loved the zoo. I was happy when we were watching gorillas, they were coming near the glass and that was nice.

Researcher: My last question is, would you like to work in science, like when growing up do you see yourself working in science field, yes like which one learner N?

Learner N: Electrical engineer.

Researcher: Electrical engineer, you'll like to become an electrical engineer. Others, yes learner L?

Learner L: Doctor

Researcher: A doctor, aren't you afraid of blood?

Learner L: No.

Researcher: Okay. Learner K?

Learner K: Doctor

Researcher: You'll like to be a doctor neh, okay, yes learner O?

Learner O: Police.

Researcher: A police officer, so you'll like to hold a gun. Learner M?

Learner M: A police officer.

Researcher: Why?

Learner M: I want to shot people who steal.

## **TEACHER**

### **Pre-interview**

Researcher: Mr. Makhubele, do you have any questions for me regarding my research before we start or you good?

Mr. Makhubele: No am sorted.

Researcher: You're sorted?

Mr. Makhubele: Yea.

Researcher: Thank you. How long have you been teaching?

Mr. Makhubele: 26 years.

Researcher: 26 years okay nice, which grade do you teach?

Mr. Makhubele: ahh.... I taught in different grades, from grade 4 to grade 12.....

Researcher: haaa.....?

Mr. Makhubele: I taught in 4 schools, but for high school I taught something like 8 years....

Researcher: 8 years?

Mr. Makhubele: yes

Researcher: Okay. Wow and what were you teaching in high school?



Mr. Makhubele: I was teaching English

Researcher: English?

Mr. Makhubele: Yea and life orientation....

Researcher: .and life orientation

Mr. Makhubele: ....and tourism.

Researcher: and tourism

Mr. Makhubele: Yea

Researcher: okay and what about going to primary which subjects were you teaching?

Mr. Makhubele: Aaahhh.... Social sciences, English Aaahhh..... and also NST

Researcher: also NST and then now, which subjects are you teaching now?

Mr. Makhubele: now am teaching Xitsonga, Social Sciences Aaahhh .... NST

Researcher: NST

Mr. Makhubele: .... and technology

Researcher: Aahhhh....so many?

Mr. Makhubele: Serious am teaching technology grade 7, both grade 5 am teaching Xitsonga and Social Sciences ....

Researcher: aha....

Mr. Makhubele: grade 4 am teaching NST and Social Sciences

Researcher: IYOH Hai that's too much I don't want to lie....and then you started teaching those ones when you got to primary school?

Mr. Makhubele: yes, yes, yes .....

Researcher: After.....

Mr. Makhubele: eeehhh....my speciality is geography ....

Researcher: Okay.

Mr. Makhubele: before they call it social sciences, I was teaching them geography and history .....

Researcher: Okay.

Mr. Makhubele: .... when I started

Researcher: in primary?

Mr. Makhubele: in primary yes.

Researcher: until they call it social sciences

Mr. Makhubele: Yes... those are my speciality especially geography and English

Researcher: Mmmm... those are your specialist?

Mr. Makhubele: yea

Researcher: Okay. Then normally in school when you take learners to the zoo do your choice wither you are taking only grade 4, foundation only or grade 4 to grade 6 or normally is the whole school?

Mr. Makhubele: No there's no way you can choose in primary.....

Researcher: Okay....

Mr. Makhubele: Who pays first, goes.

Researcher: Oohhwwoo....

Mr. Makhubele: that's the thing because you can say you want the grade 6 only to find that those who are able to pay don't even make a bus.

Researcher: iyoh..... Then you rather say that.....

Mr. Makhubele: You must include some yes, the whole school

Researcher: Ohwo okay ....and then mostly what are the

reason for you to take kids to the zoo, maybe as a school for you to say we are taking kids to the zoo what are the reasons?

Mr. Makhubele: Learners become fascinated very easily, so we are taking them to the zoo so that they can be fascinated by the animals at the zoo. The zoo is most convenient for the learners and amusing for primary school learners.

Researcher: if we are being realistic.

Mr. Makhubele: Yes, yes, yes...but here in Mamelodi zoo is the nearest.....

Researcher: yea, yea...

Mr Makhubele: We know they'll pay...

Researcher: yea.... plus, you are looking at transport

Mr. Makhubele: ... plus they are age, they are still young

Researcher: What preparations have been done in class for the zoo visit?

Mr. Makhubele: We have prepared buses and our learners are given permission slips for their parents to sign.

Researcher: Okay and then what views personally do you have regarding kids learning at the zoo, do you think they are learning, or they are going for fun

Mr. Makhubele: No, they do learn because they are fascinated by different kinds of animals especially when they see them live....

Researcher: Okay.

Mr. Makhubele: Not in television...

Researcher: yeah

Mr. Makhubele: ....so they do learn and their very interested.

Researcher: Okay and what do you think they mostly enjoy when going to the zoo? What do they enjoy mostly?

Mr. Makhubele: When animals play, like Panda...

Researcher: Yah..yah..

Mr. Makhubele: yeah they like playing and all this thing

Researcher: Oh...yeah

Mr. Makhubele: Yeah they love...and also on their way to the zoo, they are in the bus, busy singing, some dancing ...

Researcher: Yeah..

Mr. Makhubele: ...they are free out of learning situation.

Researcher: Oohh...(laughing)

Mr. Makhubele: (laughing)

Researcher: Unlike in the classroom...?

Mr. Makhubele: Yeah.. unlike in the classroom

Researcher: That's interesting. What is it that they do not enjoy mostly when going to the zoo, one thing that bores them, so far in your observation?

Mr. Makhubele: To, to, to, to.... to always tell them to keep quit

Researcher: Okay

Mr. Makhubele: What do you expect from a kid? a kid must talk...

Researcher: Mm.

Mr. Makhubele: ... a kid must be free ...

Researcher: yeah...

Mr Makhubele: ... you mustn't say sshhh "put your hand in your



mouth "and all this kind of stuff ....

Researcher: ....and we do that

Mr. Makhubele: ...no, no usually we do that but that's wrong, a kid is a kid, a kid must play, a kid must talk because they are in the exploration stage they need to ask questions and all that.

Researcher: okay. And then...what is it that learners normally do when they get to the zoo on their arrival, something we know they'll normally do immediately after their arrival

Mr. Makhubele: Usually...usually they look forward into seeing different kinds of animals.

Researcher: Okay....so immediately on their arrival they are there.

Mr Makhubele: on their arrival they run around.

Researcher: Yeah they want to scatter.

Mr Makhubele: yeah start running around, some will come ask me about toilets and all this kind of things.

Researcher: Okay, do you think there's some change of behaviour, from before going to the zoo and after coming from the zoo

Mr Makhubele: Yeah I should think so, because after from the zoo, they...they. Come back with more knowledge and information...

Researcher: Okay

Mr. Makhubele: ...about what they thought is happening because they see animals on TV some of them, some of them it'll be for the first time to see real animals, you see, so

they come back with knowledge

Researcher: yeah there's that....

Mr Makhubele: and looking at life in the different way

Researcher: Mmmm...

Mr. Makhubele: like, you see, it's obvious they'll be adult visitors there, some of them are going to shake a hand of chimpanzee

Researcher: Yebo...

Mr. Makhubele: that kind of behaviour you see

Researcher: yebo

Mr Makhubele: so they'll learn that that animal is not harmful

Researcher: yeah

Mr Makhubele: you can interact with it

Researcher: Okay.

Mr Makhubele: like feeding some of the animals and all

Researcher: Aahh Okay. So my last question is what type of pictures do learners take when they are at the zoo, are they allowed to take phones? are they allowed normally?

Mr Makhubele: yes, yes they are allowed

Researcher: to bring along phones?

Mr Makhubele: yes, yes.

Researcher: most of the time which pictures do they take?

Mr. Makhubele: Aahh..... I should think animals, I should think birds

Researcher: yeah..

Mr. Makhubele: you see birds they sing, especially...

Researcher: Colourful

Mr. Makhubele: you see those big birds with different colours.

Researcher: yeah

Mr Makhubele: is for the first time they see them sometimes

Researcher: mmm...okay thank you Mr Makhubele we are done.

#### Post-interview

Researcher: Mr. Makhubele thank you very much, do you have any question you'll like to ask before we start

Mr. Makhubele: No, no

Researcher: You okay neh?

Mr. Makhubele: yes

Researcher: Okay, ahmm according to you what is it that learners enjoyed at the zoo the most, the one you saw

Mr. Makhubele: from what I've saw or observed is that most of the kids they didn't know those animals...

Researcher: okay

Mr. Makhubele: .. maybe they saw them on television or so on, it was for the first time, hence the were very much excited, to see them

Researcher: So, like there were running around or something

Mr. Makhubele: yes, yes around the were moving freely of course, around the zoo.

Researcher: Okay my second question is what the least thing is they've enjoyed, something you think I didn't sit well with them

Mr. Makhubele: something they enjoyed the least?

Researcher: yes

Mr. Makhubele: maybe crocodile or maybe this animal, they know them like Impala

Researcher: Ohh...

Mr. Makhubele: yes

Researcher: is like they are familiar with them

Mr. Makhubele: They are familiar with them

Researcher: So, they enjoy those they did not know

Mr. Makhubele: Those they do not know and those big five

Researcher: Ohwo okay, okay. Then, what is your view about learners learning at the zoo, do you think they do learn, or they go there for fun?

Mr. Makhubele: Learners were fascinated when animals were moving, they enjoyed seeing animals eat and making sounds. Learners were asking with excitement questions such as why certain animals were making sounds and why monkeys could jump from tree to tree.

Researcher: So, what is your view on learning?

Mr. Makhubele: Learners learn because during the zoo visit there was a session where they were taught about zoo animals.

Researchers: How did you see that learners learned at the zoo?

Mr. Makhubele: Sadly I was not in the session when they were taught, but my colleagues did say that learners did learn at the zoo.

Researcher: Do you think when kids go to



the zoo influence their attitudes towards science, if they love science more now in the classroom or they ask more question, or there's no change of attitudes.

Mr. Makhubele: yes, yes it does influence, I mean, I mean logically new experience raises many questions to everybody

Researcher: okay

Mr. Makhubele: So, they were inquisitive in class about the trip and they did ask us some questions.

Researcher: My second last question, what is that memorable thing they did at the zoo, you think they won't forget, its either something they've seen.

Mr. Makhubele: Like sharks, sharks you can't see a shark, most of them have never been in the sea, the shark was the memorable experience because those other animals they might have seen them maybe on TV, but it's rare to see sharks even on TV

Researcher: Obvious

Mr. Makhubele: ye

Researcher: Is there anything would you like to change for the future zoo trip, you went to the zoo, right? Is there one thing maybe let's say next year you still going to the zoo, what's one thing you'll want to change, its either from their experience going to the zoo.

Mr. Makhubele: I think the tour guides should make an itinerary around the zoo and the must also teach this learners behaviour of the animals

Researcher: okay

Mr. Makhubele: This one behaves like that and so on and so on.

Researcher: They should give them more details on those animals.

Mr. Makhubele: Okay, Mem can I add something, this tour guides should go with them, they should not leave them

Researcher: So, this tour guides they teach them and just...

Mr. Makhubele: They just leave them

Researcher: If only they'll go with them on each and every animal and say this is a leopard it behaves this way and all that.

Mr. Makhubele: yes

Researcher: Okay thank you very much.

#### SCHOOL D

#### LEARNERS

Learners' responses translated from Zulu to English.

#### Pre-interview

Researcher: Do you have any questions you'll like to ask me about I start?

Learners: No.

Researcher: My first question is what is your age, how old are, learner P?

Learner P: Nine years old

Researcher: Nine years old, okay learner R?

Learner R: I'm eleven years old turning twelve.

Researcher: Turning twelve this year okay, learner Q?

Learner Q: I'm twelve years old turning thirteen years old this year.

Researcher: Okay thank you, learner S?

Learner S: I'm eleven years old

Researcher: Learner T?

Learner T: Eleven years old.

Researcher: Eleven years. Okay, are you a female or a male, do you guys know the difference?

Learners: Yes

Researcher: Female is a ...?

Learners: Girl

Researcher: Male is a?

Learners: Boy

Researcher: Learner P

Learner P: Male

Researcher: Learner Q?

Learner Q: Female

Researcher: Learner R

Learner R: Female

Researcher: Learner S

Learner S: Female

Researcher: Learner T

Learner T: Male.

Researcher: which grade are you in, learner R

Learner R: Six

Researcher R: grade six, learner Q

Learner Q: grade 7

Researcher: Learner P

Learner P: Grade 4A

Researcher: Learner S

Learner S: 6A

Researcher: Learner T?

Learner T: Grade 6A

Researcher: Grade 6A. what is your favorite subject, you do know what are subjects, what is your favorite subjects and tell me why is it your favorite? Will start with learner Q?

Learner Q: Math's

Researcher: Math's why?

Learner Q: because it teach us more about fractions, divisions, additions and multiplications.

Researcher: okay that's nice another one?

Learner R: I love social science because I love learning about another person's history

Researcher: so, learner R you love social science because you learn more about people's history/

Learner R: Yes

Researcher: Okay, learner P?

Learner P: Natural science and technology

Researcher: Why?

Learner P: because it teaches us with technology

Researcher: it teaches you with technology okay, learner S

Learner S: Natural science and technology

Researcher: Why?

Learner S: because it teaches us about science and other things like technologies.



Researcher: Okay nice, learner T?  
Learner T: Mathematics  
Researcher: Why?  
Learner T: I love calculating.  
Researcher: You love calculating right, okay. How many times have you visited the zoo, if you did go to the zoo how many times have you went? Learner R?  
Learner R: Three times  
Researcher: three times, learner Q?  
Learner Q: two times.  
Researcher: two times, learner S?  
Learner S: three times.  
Researcher: three times, learner P?  
Learner P: four times  
Researcher: four times, learner T?  
Learner T: two times  
Researcher: two times, okay. Since you guys all went to the zoo, when you think about it what is it that you've enjoyed doing the most. Yes, learner R  
Learner R: Eating  
Researcher: Eating, okay it was nice to have lunchbox. Learner Q?  
Learner Q: Chilling  
Researcher: Sorry?  
Learner Q: Chilling.  
Researcher: Okay just chilling with your friends moving around, okay learner S  
Learner S: Playing swings.  
Researcher: Okay because there are a lot of places where you can play, okay learner P?  
Learner P: Watching a gorilla  
Researcher: Watching a Gorilla why, was it big and nice?  
Learner P: Yes.  
Researcher: Really, okay learner T?  
Learner T: Looking at lions.  
Researcher: Looking at lion right, okay that's very nice. What is the least thing you didn't enjoy, something you did not enjoy, you've been telling me what you've enjoyed, tell me what you did not enjoy? Learner T  
Learner T: Swings.  
Researcher: Swings, those were not your favorite?  
Learner T: Yes.  
Researcher: Okay, learner S?  
Learner S: When we were going back home  
Researcher: When you were going back home you were bored, okay, learner R  
Learner R: When other people were telling us what to do and what to not enjoy  
Researcher: Who are those the most like teachers  
Learners: Yes  
Researcher: saying don't touch this, don't touch that?  
Learners: Yes  
Researcher: Okay others?  
Learner Q: There's nothing I didn't enjoy.  
Researcher: There's nothing you didn't enjoy learner Q, okay learner P?  
Learner P: I was not enjoyed when I sit down, I looked too many things ..  
Researcher: Pardon.  
Learner P: When I sit down all I wanted was to watch animals  
Researcher: All you wanted was to watch animals, okay cool. What do you remember most about the zoo, what was the most memorable thing you've learnt about the zoo or something, what did you learn, or something you've seen and you didn't know about it, yes learner S?  
Learner S: Never play with dangerous animals  
Researcher: Never play with dangerous animals right, don't say come lion and you put your fingers in the cage right, okay, learner T  
Learner T: Do not touch the snakes.  
Researcher: Do not touch the snakes right, learner R  
Learner R: Other animals have ages, homes.  
Researcher: Ohh nice, nice. Learner Q?  
Learner Q: You should stay away from wild animals.  
Researcher: From wild animals right, because they are dangerous  
Learner Q: Yes.  
Researcher: Okay learner P?  
Learner P: I didn't know monkeys have hands and ...  
Researcher: They have what?  
Learner P: They have hands and feet's  
Researcher: Oh .. okay that's nice. How do you feel about the zoo generally, do you love it, you hate it, you are afraid of it? Learner S  
Learner S: I feel a bit scary because when I see a snake, I feel like running away.  
Researcher: Mm .. nice, yes learner Q?  
Learner Q: Happy because mostly I like animals  
Researcher: mostly you like animals, yes learner R?  
Learner R: I feel excited because I learn about other things.  
Researcher: Nice, yes learner T what are you saying?  
Learner T: what's the question?  
Researcher: How do you feel about the zoo, do you like it or you don't, it annoys you?  
Learner T: I like It  
Researcher: Why?  
Learner T: to learn about other animals which are dangerous.  
Researcher: Nice, learner P how do you feel about the zoo?  
Learner P: I feel happy because I saw animals I didn't know.  
Researcher: You see animals you didn't know, oohh okay that's very nice. We are going to the zoo when school reopens right, what do you think you'll do when you get to the zoo? Learner R





Learner R: I want to know which animals I can touch, feed and take care of them like an elephant.

Researcher: learn about animals, others? Learner Q

Learner Q: Play swings.

Researcher: play swings, others, learner S

Learner S: Chilling with my friends.

Researcher: Chill with your friends, yes, learner P

Learner P: I think we are going to learn about different animals and how they are different but look the same, like cheetah and leopard.

Researcher: See animals and give them food, mm you not afraid I see, learner T?

Learner T: Walking around the zoo.

Researcher: Walking around the zoo doing what?

Learner: Seeing animals.

Researcher: Animals yes. So, you guys told me what you'll do when you arrive, but what do you think your teachers will want you to do, yes learner R?

Learner R: Keep quiet and stay alert.

Researcher: Keep quiet and stay alert, okay, others, learner Q?

Learner Q: Will look at animals and we learn about them

Researcher: You'll look at animals and learn about them okay, learner S?

Learner S: They will say no do not touch this, but they will touch it.

Researcher: Okay, learner T?

Learner T: They want us to keep quiet, but they can't keep quiet.

Researcher: They'll want you to keep quiet, but they'll be making noise, okay learner P?

Learner P: They'll want us to be still

Researcher: Okay be still and not move around, okay. What about you, what do you want to do? Learner R?

Learner R: I am looking forward going to the zoo to see and learn about lots of animals. I want to know which animals I can touch, feed and take care of them like an elephant.

Researcher: Okay that's nice, learner T?

Learner: Walk around the zoo and look at other animals.

Researcher: Walk around the zoo and look at other animals, yes learner Q?

Learner Q: Want to learn more about animals.

Researcher: Want to learn more about animals, nice learner S?

Learner S: I want to know learners I didn't know live

Researcher: Good, learner P?

Learner P: I think we are going to learn about different animals and how they are different but look the same, like cheetah and leopard.

Researcher: Mm ... nice, since you guys are going to the zoo with your classes, what do you think your class will do, learner S?

Learner S: They'll make noise and be disrespectful to teachers because they always make noise.

Researcher: Okay, learner R?

Learner R: They'll jump around and do anything they seem to be pleased with

Researcher: Okay, learner Q?

Learner Q: They'll make noise.

Researcher: Mm ... they'll make noise, learner T

Learner T: They'll make noise and touch things that are not touchable.

Researcher: Mm ... learner P?

Learner: P The will not ..

Researcher: They will?

Learner P: Not behave.

Researcher: Not behave okay, thank you, thank you very much. How do you feel about animals, at the zoo their animals right, so how do you feel about them? Learner T?

Learner T: Am comfortable with animals

Researcher: You're comfortable?

Learner T: Yes.

Researcher: Okay, other one, learner S?

Learner S: Am a bit scary.

Researcher: You're scared? In other words, you're afraid of animals.

Learner S: Yes.

Researcher: Okay, learner R?

Learner R: Excited to see animals.

Researcher: Excited? You going to see snakes and you excited, okay learner Q?

Learner Q: A bit scary

Researcher: A bit scary right?

Learner Q: Yes.

Researcher: because you'll be seeing snakes moving around different animals, iyoh. Learner P?

Learner P: I feel scared because others are dangerous.

Researcher: Others are dangerous right, so it's a bit scary. Okay. My second last question, which animal do you want to see at the zoo and why? Learner T?

Learner T: A lion.

Researcher: lion why?

Learner T: I want to see it when it roars.

Researcher: Okay, learner R

Learner R: Giraffe, because I've never seen it before.

Researcher: You've never seen a giraffe before, okay learner Q?

Learner Q: Monkey because I want to feed it.

Researcher: Iyoh okay learner P? which animal do you want to see?

Learner P: Buffalo.



Researcher: Buffalo, why?

Learner P: Because I didn't see it before.

Researcher: You didn't see it before right, okay learner S?

Learner S: I want to see a snake

Researcher: A snake why?

Learner S: because I've never seen it walking around, I see it maybe on TV.

Researcher: Most of the time is on TV, right?

Learner S: Yes

Researcher: Okay, okay. Do you guys know their people who work in science, where they do work, you are doing natural science and technology right?

Learner: Yes.

Researcher: which job when you do natural science and technology until grade 12 you then go and study for, do you know it? Learner R?

Learner R: scientist

Researcher: Scientist, you can become a scientist, you can become a doctor, nurse, an engineer, you can be a teacher but teach natural science and technology, you can work at the zoo. Do you know a botanical garden?

Learners: No.

Researcher: Do you see plants?

Learners: Yes.

Researcher: Some are botanists, they work with plants, they look at them and take care of them they grow. You

can work at the zoo and work with animals, you can be an animal doctor or human doctor. So, my question to you is, do you guys want to work in science, that's my question. I've told you different kinds of work you may find in science, so do you want to work in science when you grow up? Learner Q?

Learner Q: Yes.

Researcher: Learner R?

Learner R: Yes

Researcher: Learner T?

Learner T: Yes

Researcher: Learner S?

Learner S: Yes

Researcher: Learner P?

Learner P: Yes.

Researcher: Serious, so you not afraid of animals?

Learners: No.

Researcher: Okay, so you've draw animals for me right

Learner: Yes.

Pre-interview (Drawings)

Researcher: you'll tell me what did you draw and why did you choose that animal, learner T ill start with you what did you draw?

Learner T: Lion.

Researcher: Why?

Learner T: I like it when it roars.

Researcher: You and animals okay, learner S?

Learner S: Tiger.

Researcher: Tiger, why?

Learner T: because I love it straps

Researcher: Mm .. nice learner R?

Learner R: Giraffe because it's my favorite animal.

Researcher: Okay, learner Q?

Learner Q: Lion

Researcher: Why?

Learner Q: because I love its color and the, the

Researcher: Yes, the fur, right?

Learner Q: Yes

Researcher: Okay, learner P?

Learner P: Giraffe

Researcher: Why?

Learner P: I like it when it eats.

Researcher: Oh ... okay. Thank you very much guys.

Post-interview (drawings)

Researcher: Welcome to our second interview, so learner S can you explain to me what you have drawn and why?

Learner S: I've drawn a leopard.

Researcher: Leopard why?

Learner S: because it's my favourite animal and I like it; I like its spot.

Researcher: Okay, learner Q what did you draw?

Learner Q: I draw a snake and a monkey because they look pretty much beautiful to me.

Researcher: Okay, learner R what did you draw?

Learner R: I draw a Giraffe

Researcher: Why?

Learner R: because it's my favourite animal.

Researcher: Its your favorite animal, okay learner P?

Learner P: I draw a tiger.

Researcher: Why?

Learner P: because I didn't see it in my life.

Researcher: Okay, learner T what did you draw?

Learner T: I draw a lion because I love it when it roars.

Post-interview

Researcher: You My first question is what did you enjoy about the zoo and how was the visit to the zoo? Yes T?

Learner T: It was exciting being at the zoo since it was big and it had lots of animals.

Researcher: Was big and had lot of animals?

Learner T: Yes mem.

Researcher: Okay, R?

Learner R: Games.

Researcher: Games, okay Q?

Learner Q: I like the double train in the cable cars

Researcher: Okay nice, yes S?

Learner S: I enjoyed eating and playing games and it was so big

Researcher: Big what?





Learner S: Zoo.

Researcher: Okay, P?

Learner P: I enjoyed playing around.

Researcher: To go around right, okay. What did you not enjoy at the zoo? Yes S?

Learner S: When we were going

Researcher: When you were going okay. Okay, others?

Learner Q: Nothing.

Researcher: Learner Q nothing, R?

Learner R: Nothing.

Researcher: Nothing, T?

Learner T: Our zoo teacher taught us that reptiles are animals that are covered with scales. But I was wondering how these animals came to have scales and not skin with hair like us, our zoo teacher did not explain this to us.

Researcher: Nothing, P?

Learner P: Nothing.

Researcher: Nothing okay. If they say next week you are going back to the zoo, what is it that you'll love to change, what is it that didn't happen, and you'll like for them to happen. Yes R?

Learner R: Spend more games, spend more times at the games.

Researcher: Spend more times at the games neh. Yes T?

Learner T: learn about other animals.

Researcher: Learn about other animals you

didn't learn about, others?

Learner Q: Nothing

Researcher: There's nothing learner Q? S?

Learner S: Nothing

Researcher: Nothing S and P?

Learner P: Nothing.

Researcher: Okay. What did you learn at the zoo? T?

Learner T: That reptile's animals are animals that are covered with scales

Researcher: Animals that are covered with scales, yes learner S?

Learner S: I have learned at the zoo that we should not touch wild animals such as a cheetah and a leopard, we should stay far away to be safe. Our zoo educator also told us that a cheetah has dark spots, while a leopard does not have dark spots but dark circles with lighter skin inside the circle.

Researcher: Okay nice and Q?

Learner Q: Wild animals are dangerous.

Researcher: Wild animals are dangerous, others?

Learner P: I observed that there are some animals such as monkeys that lives on top of the trees. While gorillas were inside a cage. It was difficult for us to see these gorillas because they were hiding. But there were very big when we saw them.

Researcher: Okay and learner R?

Learner R: Many animals live in different places such as on trees, inside the water and some in glasses. Monkeys lives on top of the tree, fish and crocodiles in water and snakes inside glasses. But our teacher explained that snakes are in glasses because they are at the zoo.

Researcher: Okay are there things you wanted to do but you didn't do them? Yes Q?

Learner Q: We didn't spend much time at the swings.

Researcher: You didn't spend much time at the swing. Yes S?

Learner S: Playing on the big wheel but we didn't.

Researcher: Sorry?

Learner S: Playing on the big wheel but we didn't.

Researcher: Oh, you didn't play on the big wheel. Others?

Learner T: Nothing.

Researcher: Nothing, okay P?

Learner P: Nothing.

Researcher: R?

Learner R: Nothing.

Researcher: Nothing, okay. Are there things you wanted to see but you didn't see them or to do them? Yes P?

Learner P: I didn't see a tiger.

Researcher: You didn't see a tiger; you wish you could go back and see a tiger. T?

Learner T: I didn't see Zebras.

Researcher: You didn't see zebras. R?

Learner R: I wish I could go back and see Giraffe

Researcher: Go back and see Giraffe. S?

Learner S: I didn't see Zebras too.

Researcher: You didn't see Zebras too, Q?

Learner Q: I wish I could go back and see all the monkeys.

Researcher: See all the monkeys, okay. How do you feel about animals after coming from the zoo? T?

Learner T: I love animals.

Researcher: You love animals, okay another one?

Learner R: I feel free

Researcher: Sorry?

Learner R: I feel free

Researcher: You feel free around animals.

Learner Q: I love animals.

Researcher: You love animals, why?

Learner Q: They amaze me.

Researcher: They amaze you, okay, S?

Learner S: I feel scared because when I close my eyes, I feel like it's here.

Researcher: Oh okay. P?

Learner P: I feel scared because when the monkey hits the glass.

Researcher: You feel scared when the monkey hits the glass, its like it wants to grab you, okay. Which



animal did you enjoy seeing? Yes T?

Learner T: Tiger.

Researcher: Tiger why?

Learner T: because the was a white tiger and I've never saw it in my life.

Researcher: Oh okay, S?

Learner S: Rabbits.

Researcher: Rabbits, why?

Learner S: I like the brown one because it's beautiful.

Researcher: Okay, P?

Learner P: Elephant.

Researcher: Elephant, why?

Learner P: I like them when they are buffering.

Researcher: Okay, R?

Learner R: Snakes because there were busy moving.

Researcher: Busy moving, oh. Q?

Learner Q: Monkeys because there playing.

Researcher: There were playing right?

Learner Q: Yes.

Researcher: How was the visit to the zoo?

Learner Q: The visit was fun. I love the animals and they amazed me.

Learner R: I was very excited when I saw animals at the zoo. It is a good feeling to see animals live compared to seeing them on TV or textbooks. Seeing gorillas was more exciting because they are similar to human beings although they

are uglier compared to us.

Learner T: It was good I was very excited.

Learner P: I enjoyed going with my friends in a group.

Learner S: Seeing animals live was very exciting.

Researcher: Last time I asked you guys if you'll like to work in science, we said what kind of jobs do we find in science.

Learner Q: Doctor

Researcher: Doctor and?

Learner T: Pet doctor

Learner S: Scientists

Researcher: Yes, you can work at the zoo, work at the botanical garden. My question is would you like to work in science, after coming from the zoo? Yes S?

Learner S: Yes, because I really want to be a vet.

Researcher: okay, others, yes T?

Learner T: Other animals are caged cruel

Researcher: Okay, yes R?

Learner R: Yes, because I love to be around animals.

Researcher: Thank you R, P?

Learner P: I want to give animals food.

Researcher: Food, okay, Q?

Learner Q: I enjoyed looking at the animals.

Researcher: Okay thank you very much guys.

## TEACHER

### Pre-interview

Researcher: Mr Mahlangu how are you?

Teacher Mahlangu: Am good.

Researcher: Am okay, I don't know if you have any questions before we start.

Teacher Mahlangu: I'll ask you at the end.

Researcher: You'll ask me at the end, okay no stress. Firstly ill like to ask you how long have you been teaching?

Teacher Mahlangu: I've been into teaching for more than a year.

Researcher: For more than a year, okay.

Teacher Mahlangu: I think if am not mistaken it's a year and 6 months.

Researcher: and 6 months around there, oaky. Which grades are you teaching?

Teacher Mahlangu: Am teaching SS and NS.

Researcher: Okay

Teacher Mahlangu: Which is grade 6

Researcher: Okay.

Teacher Mahlangu: 2 classes in grade 7 for social sciences

Researcher: Okay.

Teacher Mahlangu: Another 2 classes in grade 6

Researcher: For social sciences?

Teacher Mahlangu: Yes for social sciences

Researcher: Okay, you've already told me which subjects so that's fine. So the moment

you started teaching you started with those subjects?

Teacher Mahlangu: Yes

Researcher: Those are the subjects you've been teaching?

Teacher Mahlangu: Yes nothing else.

Researcher: Okay. Most of the times a school in your experience when they take kids to the zoo how do you do it, do you say we taking this class or we taking the whole school?

Teacher Mahlangu: When we take kids to the zoo foundation phase goes only

Researcher: Okay.

Teacher Mahlangu: Then intermediate and senior phase goes together different days

Researcher: Different days?

Teacher Mahlangu: Yes

Researcher: Okay, is there a time they be like we are taking grade 7 only because its natural science and at the zoo it's about science, only grade 7 can go or it has never happened?

Teacher Mahlangu: since I've started that has never happened where we take only one class

Researcher: Okay, normally you take kids as you've said

Teacher Mahlangu: We take according to phase, intermediate and senior.

Researcher: What do you think the reason is to take kids to the zoo?

Teacher Mahlangu: I am hoping that learners



will get motivated to learn science after the visit to the zoo. I am expecting learners to learn about different mammals.

Researcher: What preparations have been done in class for the zoo visit?

Teacher Mahlangu: I have presented a lesson where I guided my learners on what to observe during the zoo visits.

Researcher: Have you visited the zoo prior to your learners' visits and prepared any worksheets?

Teacher Mahlangu: No we do not do that and no, I have not prepared any worksheets.

Researcher: Okay

Teacher Mahlangu: when learning, it shouldn't only be theory

Researcher: Yes.

Teacher Mahlangu: they should be exposed to things they learn

Researcher: they've learnt in class

Teacher Mahlangu: our trips are educational tour not just for fun

Researcher: What's your view in learning at the zoo, do you think they do learn or its about fun, pocket money.

Teacher Mahlangu: in my view I am aware they learn but there's fun in that process

Researcher: Okay.

Teacher Mahlangu: Yes, they may think they are happy because they are at the zoo and seeing animals they've never seen before they do learn

Researcher: they do learn, unaware they do learn.

Teacher Mahlangu: unaware they do learn.

Researcher: Okay, what do you think they enjoy most at the zoo?

Teacher Mahlangu: what I think they enjoy most is, kids this days loves watching television a lot, so they become happy when they notice that those animals they see on tv their real.

Researcher: What do you think they do not enjoy at the zoo?

Teacher Mahlangu: So far I don't think the is such

Researcher: because it's a tour

Teacher Mahlangu: yes, in a tour everything is a happiness

Researcher: In a child

Teacher Mahlangu: yes, a child enjoys everything especially when it involves animals, they are happy.

Researcher: Okay and when kids arrives at the zoo what do they normally do, do they run and go to see animals?

Teacher Mahlangu: Before we release them, we sit down and have a word with them, because we avoid for them to not be safe

Researcher: Yes

Teacher Mahlangu: because of excitement, in an environment they're not used to when seeing animals and they become scattered

Researcher: Yes

Teacher Mahlangu: so, we talk to them so that they become disciplined, we go in lines when going to see animals so we can have order

Researcher: Okay

Teacher Mahlangu: we also divide ourselves as teachers, maybe a teacher managing this group by going with 10 students and all that.

Researcher: Okay. Do you think there's some change of behaviour before and after going to the zoo?

Teacher Mahlangu: I could say the is a change in a child

Researcher: Yes

Teacher Mahlangu: their motivated, they could see live is not only in their books or school

Researcher: Yes.

Teacher Mahlangu: they get encouraged, to study finish school and work so that they can explore lives and see animals in different school.

Researcher: Okay my last question, as kids are at the zoo, they do take pictures, right?

Teacher Mahlangu: Some of them they do carry cell phones, parents do give them cell phones when there's a trip, so that they capture moments

Researcher: So, as the school do you allow them

Teacher Mahlangu: It's an arrangement of parents, not an agreement

Researcher: Okay.

Teacher Mahlangu: so that kids bring cell phones, but as you know they end up bringing them in other ways, parents giving their child cell phones so that they take photos, but there's no agreement between teachers and parents.

Researcher: Okay we are done that's the end it was very short.

### Post-interview

Researcher: Mr Mahlangu thank you for our last interview I only have 6 questions

Teacher Mahlangu: Okay.

Researcher: did you go to the zoo? I didn't see you.

Teacher Mahlangu: Yeas I was there, just that we were scattered

Researcher: scattered. Yes I saw you were many. What do you think kids enjoyed the most at the zoo?

Teacher Mahlangu: You know kids enjoyed everything, seeing animals they loved that

Researcher: Yes

Teacher Mahlangu: because some it was their first-time seeing animals with their naked eyes

Researcher: Yes.

Teacher Mahlangu: they only see them in televisions or newspaper, seeing them live some of them it was their first time, so they did enjoy.

Researcher: what do you think they didn't enjoy?

Teacher Mahlangu: Thinking that our trip is only one day, and



Pretoria zoo is really huge, so some are tired already

Researcher: yes

Teacher Mahlangu: but if it was like 2 days going, today we are seeing this kind, tomorrow will be seeing these ones

Researcher: you see something else also.

Teacher Mahlangu: So now we have to see all the animals in one day

Researcher: One day

Teacher Mahlangu: So now they get tired easily because their still kids, so sometimes there are mountains we have to climb.

Researcher: So, they gym.

Teacher Mahlangu: Yes.

Researcher: What are your views regarding kids who learn at the zoo, do you think they do learn, or they didn't or it was for fun?

Teacher Mahlangu: Learners were explaining different characteristics of baboons and chimpanzees, saying that most primates live in the trees such as monkeys, except for gorillas which were inside a cage and that most primates are social animals according to their observations and what they were told by the zoo educator.

Researcher: Oh yes

Teacher Mahlangu: They can now differentiate it, because in some there were tour guides who taught them a cheater is like this and a leopard is like

this, so they no longer have that confusion

Researcher: Okay.

Teacher Mahlangu: they can now differentiate a baboon and chimpanzee you see a monkey

Researcher:

Teacher Mahlangu: even though they are the same. Those are the things I've learnt.

Researcher: They've learnt. Okay. Do you think them going to the zoo did influence attitudes they have towards education, especially in science, maybe natural science and technology?

Teacher Mahlangu: Yes, I could say that, even though I do not teach that field

Researcher: What about social sciences?

Teacher Mahlangu: There's a possibility of a change, it would have been even better if I was teaching natural sciences, because we do not deal with animals. But I think the was a difference because they do know like geography, they know in which place does a certain animal live in. They've seen even that animal, where they live, what kind of a place they live in, they didn't learn about animals also, they learnt about trees also

Researcher: Yes

Teacher Mahlangu: so, we did have such topic in geography, they now know this tree lives for six months, for a year, another one forever.

Researcher: Okay.

Teacher Mahlangu: So they now know.

Researcher: So it's been cleared on you. Okay. So overall which activity do you think most kids loved at the zoo, what was the most thing they loved seeing or doing?

Teacher Mahlangu: What I observed was, the was a time they did hiking where there were able to view Pretoria zoo as a whole

Researcher: Okay.

Teacher Mahlangu: I think that activity they did love a lot, so that they could see Pretoria as a whole because some it was not about the zoo only it was also about experiencing seeing places like people who do Geography.

Researcher: Yes

Teacher Mahlangu: So they did enjoy that.

Researcher: Okay. My last question, if you were to go back to the zoo maybe next year or the year after, are there any changes you think they should be comparing to this year?

Teacher Mahlangu: Change I'll like to have will be time, so that our trip shouldn't be one day, we should spend less time while watching animals because of time

Researcher: Yes.

Teacher Mahlangu: So if it may be extended to two days

Researcher: Okay.

Teacher Mahlangu: or three days, so that we know we watch this section of animals, we watch trees, they

engage in other activities, it's not about watching trees only

Researcher:

Teacher Mahlangu: they can even ride cable cars, watch the view easily

Researcher: Okay.

Teacher Mahlangu: to look at Pretoria, that's what ill like for them to do

Researcher: It's like same group that went today can go back tomorrow to see different things.

Teacher Mahlangu: They'll have better time to learn everything about animals, because there are a lot of animals because in others we didn't even stay, we watched them while passing because of time and animals have certain time they live in, this in the morning they are

Researcher: Active

Teacher Mahlangu: yes, others when it's like they start hibernating and all that. Another thing I'll like to change will be most animals in winter they hibernate, unlike in summer they expose themselves.

Researcher: Yes

Teacher Mahlangu: some animals in winter they hide.

Researcher: Okay Mr Mahlangu thank you very much.



**SCHOOL E**

**LEARNERS**

Learners' responses translated from Zulu/Sepedi to English

Drawing pre-interview

Researcher: Hello, my name is Lerato and I am going to ask U about the zoo. My first question is what have U drawn and why? Yes, V.

V: Lion

Researcher: Y?

V: Because I like it.

Researcher: Anyone, yes X.

X: I have drawn a snake.

Researcher: Why a snake?

X: Because it can be fluffy sometimes and we can see it at the zoo, but I am scared of it.

Researcher: Okay, anyone yes Y.

Y: Because it is fat and I like fat things.

Researcher: Okay what have U drawn?

Y: An elephant.

Researcher: Yes, U what have you drawn,

U: I have drawn a bear?

Researcher: Why?

U: Because I like it.

Researcher: And W what have you draw?

W: A fish.

Researcher: Why a fish?

W: Because I eat it.

Researcher: Do you guys have any questions to ask me before we start with our interview?

All learners: No

Pre-interview

Researcher: Any one can start, and U guys can use any language you are comfortable with. My first question is How old are you and when is your date of birth?

V: 7 July 2008, 11 years old.

Researcher: Okay and W?

W: 19 September 2008, 11 years old.

Researcher: Anyone, yes X?

X: 29 June 2009, I am 10 years old.

Researcher: Okay and Y?

Y: 31 July 2009, and I am 10 years old.

Researcher: Okay and then U?

U: 5 August 2009, I am 10.

Researcher: Okay I am going to ask if you are a female or male?

U: Male.

Other learners: No you are a female.

Researcher: When you are a girl you are a female and when you are a boy you are a male. U?

U: Female.

Researcher: Okay Thank you, V?

V: Female.

Researcher: W?

W: Female.

Researcher: X.

X: Female

Researcher: And Y?

Y: Female

Researcher: Okay we are all ladies here. So my ladies, which Grade are you in?

U: 4.

Researcher: Okay and V?

V: 5.

Researcher: W.

W: 5

Researcher: And X?

X: 4 b.

Researcher: And Y?

Y: 4 b.

Researcher: Okay and have you ever failed a Grade?

U: No

V: No

WE: No

X: No

Y: No

Researcher: Okay. What is Ur favourite subject and why?

U: History because I like it

V: Mathematics because you learn lot of things

W: History because I learn lot of old things

X: Mathematics because it is always around us. Like now we are six.

Y: Maths, because I like mixing things mmm... diving things

Researcher: Okay. How many times have U visited the zoo?

U: Many times, I do not remember.

V: lots of times.

W: Me too.

X: 2 times.

Y: 4 times.

Researcher: Okay, what do you enjoy most about the zoo.

X: I enjoy looking at the animals and learning about the animals, and

like we also have animals that we can have as pets.

V: I had to go to the zoo because I like to see animals that come from other countries and I would like to see a whale someday.

Y: Because they're lot of animals and we can learn how old they are because we are not aware.

W: Because we see lots of animals and they teach us about them sometimes and I like to ride rides.

U: I love animals because they teach us about them.

Researcher: What do you enjoy least about visiting the zoo?

All learners: The scary animals, the snakes and the sharks.

Researcher: Why?

W: Because they are dangerous, they can kill you especially a lion.

V: And dangerous because when you are at the zoo you do not put your hands in the fence because animals will eat you.

X: I am scared of them because they might bite me. I like the snake but if I see scary stuff, I dream about them and have nightmares

U: The snakes are inside the glass when we scream they might break the glass we do not know.

Researcher: Okay, what was the most memorable/important thing/s that you learned in the zoo?

Y: That tortoise when they are growing old, you can read their years on their shell.

X: Even when they are young.





Y: But if it is big you cannot read it.

X: Yes and if it is young, you can see at the back that it is 5 years old.

U: I have learnt about an elephant, if you do something to it, it will never forget and one day it will revenge.

V: I like jaguar but it scary because it is dangerous because when you are at the zoo it looks at you lots of times.

W: Elephant, because when I tell it my name it wants to touch me.

U: Elephant, when I tell it something, it will always remember.

Researcher: How do you feel about the zoo?

W: I become happy.

X: I am, not happy because we should not go to the zoo all the time, we should go to other trips to see other things.

U: I like it

V: I love it because when I grow up I want to own a Jaguar

Y: I am scared of some animals, so I do not like it that much.

Researcher: What do you think you will do on the trip to the zoo?

X: I want to see new animals at the zoo.

V: learn about lot of animals.

W: We are going to see different animals and eat our lunch box.

U: I think we will see a giraffe.

Y: To learn how they live, what they eat and what they drink

Researcher: What do you think teachers will have you do?

Y: Touch animals, they did it last year.

**All learners:** They will want us to go see different animals.

Researcher: Why is your class going to the zoo?

V: They will be happy.

W: They will want to see other animals that they do not know.

X: They will want to go and learn about things, but some do not have money to pay to go to the zoo.

Y: I just do not want to go there because other kids we feel sorry for them because they do not have money to pay.

U: The same as X.

Researcher: What do you want to do when you get to the zoo?

Y: Want to see the animals and learn about them.

V: Because I want to go at the zoo and write what is the name of the animal, it eats what and it drink what.

X: I want to see animals that are new. We were told that they are new animals at the zoo.

W: I want to see animals that are new.

U: I want to learn about other animals and to see new animals.

Researcher: How do you feel about animals?

X: Yoo, we like them. We like them but we do not love them. Actually, we love them, but we are scared of them.

Y: Because when it gets angry it can do something dangerous, but when you do not do something it can be good. So I do not love them.

W: Me I love them, sometimes I do not love them.

V: I like it but sometimes they make scary moves and that scares me.

U: I like the them because you can make one of them your pets

Researcher: Which animal/s do you want to see and why?

U: Elephant, because how can I say it, it makes noise and I like noise, I like noise, but not class noise. The noise animals make.

X: I want to see a snake because I want to learn a lot from it, so that when it comes at my home, I will not be scared.

W: An Elephant, because it plays with water and my speech is about an elephant. I wrote a speech about an elephant because I love it, that it is kind.

V: I like Jaguar, and my speech is about Jaguar. I have learnt a lot of things that Jaguar came from another country and I like it because I do not know where it comes from. I like it because I do not know the place it prefers, and I like it because it is my favourite

U: A camel, because it can go for many days without eating and drinking and it has double eyelashes to keep out sand on its eyes. And we have learnt a lot about camel in history.

Researcher: Would U want to work in science?

**All learners:** YES. (With excitement).

W: yes

X: yes

V: Yes, because we learnt a lot of things. I like Life Science.

U: Yes

Y: Yes

Researcher: So it means you like Natural Science and Technology?

**All learners:** YES. Because they teach about different animals.

V: Animals that were in the world. W: Like a dinosaur.

Researcher: Thank you so much for participating.

### Drawing post-interview

Researcher: What have you drawn and why? Yes, U?

U: A dragon.

Researcher: Why a Dragon?

U: Because it was a first time I saw it.

Researcher: Okay, anyone else. Yes, Y.

Y: A snake.

Researcher: Why a Snake?

U: Because I love it.

Researcher: Yes, W.

W: A snake

Researcher: Why a snake?

W: Because I learnt a lot about it.

Researcher: Okay anyone, yes X.

X: A giraffe.

Researcher: Why a giraffe?

X: Because a giraffe can help you and it can reach up to the tree.

Researcher: Okay and V?

V: I am drawing a camel.

Researcher: Why a camel?

V: Because it can carry water for a long time.



Researcher: Okay, did you learn that at the zoo.

V: Yes.

Researcher: Okay cool.

### Post-interview

Researcher: My first question is, what did you enjoy in the zoo and how was the visit to the zoo? Yes V.

V: I enjoyed to see animals in the zoo.

Researcher: Okay and U.

U: To learn about other animals.

Researcher: Okay, yes W.

W: To learn about animals.

Researcher: Anyone? Yes X.

X: To learn about more animals so that when the teacher asks we could answer. I really liked and enjoyed learning about different kinds of animals, so that when our teacher asks questions about animals, we are able to answer.

Researcher: Okay and Y.

Y: To learn what animals are used to, what makes them angry and those kinds of things. At the zoo I enjoyed learning about animals, what they are used to, what makes them angry, such things.

Researcher: Okay nice. And what did you enjoy least in the zoo? Yes X.

X: I did not enjoy seeing a snake.

Researcher: Why X?

X: Because it was too scary.

Researcher: Okay, yes W.

W: We did not see a lion clearly because it was

far from us. I was wondering on the type of sounds lions make when they see human beings. But I was sad that I could not hear anything since lions were far.

Researcher: Okay, Y?

Y: I did not enjoy seeing a baboon. Because it was on a glass and it jumped on the glass closer to us and it made noise.

Researcher: Others?

You: Nothing.

V: Nothing.

Researcher: Okay, if you could what would you change about your trip?

Why: I would want animals to be different.

V: To see lots of animals

Researcher: Okay X?

X: To see lots of the animals that we did not see.

Researcher: Okay W?

W: To see animals that are from China and far away.

Researcher: Yes Y?

Y: To see other animals that I do not know.

Researcher: Okay, what have you learnt from the zoo? Let's start with W.

W: The zoo staff put us in a house and taught us about reptiles.

Researcher: Okay, yes X.

X: We learnt about the African National symbols.

Researcher: Okay others, yes Y?

Learner Y: I have learnt about the big five.

Researcher: What about the big five.

Learner Y: That we find them in our money.

Researcher: Okay and X?

Y: The same as X.

Researcher: Okay and V.

Learner V: I have learnt about snakes.

Researcher: What did you learn about snakes?

Learner V: That snakes have different colours.

Researcher: Okay. Where the things you wanted to do but you did not do at the zoo?

All learners: Yes.

Researcher: Okay, what are those things.

V: We did not see crocodile

Y: We did not see a jaguar and we wanted to see it.

Researcher: Okay, yes X.

X: we did not see a cheetah.

All: Aaaaaa... X: We did not see it for real.

Researcher: Okay, what about W.

W: Lion, Jaguar and animals they said are new we did not see them.

Researcher: Yes Y.

Y: I did not see a Leopard.

Researcher: And Y.

Y: And I did not see a dragon and they told me that it is there, but we did not see it.

Researcher: Yes X.

X: At the door there were dragon masters some of use saw them. Why: "But I did not see them".

Researcher: Are there things you want to go back and see at the zoo? You guys have already told me but let's hear. Yes X.

X: A cheetah.

Researcher: And W.

W: Lion and Jaguar.

Researcher: And V.

V: I want to go back to see a Cobra

Researcher: Others, Yes Y?

Y: Mmmmmmm, a Lion and Jaguar.

Researcher: Okay and Y?

Y: I need to know why baboons make so much noise and what are they afraid of.

Researcher: Okay. My third last question. How do you feel about animals? V.

V: When I see animals, I am so happy because some of the animals when they see us there are so happy.

Researcher: Okay and X.

X: I want to see the animals because some of them are so kind.

Researcher: U?

U: I love to see them animals, but I am scared of a snake.

Researcher: Okay, yes W.

W: As You said.

Researcher: Okay and Y?

Y: I am scared of them, so I do not want to see the same that I saw.

Researcher: Okay. Which animal/s did you enjoy seeing and why? Yes U.

U: Elephant





Researcher: Why Elephant?

U: Because when it hears something, it always remembers.

Researcher: Yes X:

X: I enjoyed seeing a camel because we learnt about it at school.

Researcher: Okay nice and V?

V: I liked seeing Flamingo that are beautiful.

Researcher: Okay Y?

Y: I liked to see an eland because those what are they called....

All learners: "discussing about it" What is that, what are you talking about... they taught use about it in English in January.

Y: Eland and we did see them

Researcher: Okay and W.

W: Crocodile.

Researcher: Why crocodile.

W: "laughs", Because it is my surname (Mokoena).

Researcher: Okay my last question. Do you want to work in science when you grow up?

All learners at once: Yes.....

Researcher: All of you?

All learners at once: Yes..... (With excitement)

Researcher: Okay, case closed then.

### **TEACHERS**

Four teachers participated in this school

### **Pre-Interview**

Researcher: Thank you very much for agreeing

to participate in this study. My first question, how long have you been teaching?

Mr Tumi: 28 years and some months.

Researcher: Mme Lebo?

Mme Lebo: 3 years.

Researcher: Okay Mme Lerato?

Mme Lerato: 27 years.

Researcher: And Ntate Tshepo?

Ntate Tshepo: 23 years.

Researcher: Okay thank you very much and which Grades are you teaching?

Mr Tumi: Grade 5 NS and Tech.

Researcher: Okay and Ms Lebo.

Lebo: Grade 5 NS and Tech

Researcher: Okay and Mrs Lerato?

Mrs Lerato: Grade 4 NS and Tech.

Researcher: Okay and Mr Tshepo?

Mr Tshepo: Grade 6 NS and Tech and Grade 7 NS.

Researcher: Okay. Those subjects you have mentioned, when did you start teaching those subjects.?

Mr Tumi: From last year (2018).

Researcher: Okay and Ms Lebo.

Ms Lebo: It being 2 years.

Researcher: And Mrs Lerato?

Mrs Lerato: Grade 4 its 2 years. All along I have been teaching Grade 6 Ns and Tech and Grade 7 NS.

Researcher: Okay and Mr Tshepo?

Mr Tshepo: Ever since I have started teaching I have been teaching Natural Sciences.

Researcher: What group of learners/classes do you usually take to the zoo?

Mr Tumi: Actually, we take them as phases. We do not specify the Grade. We will say intermediate or senior phase.

**Other teachers agreed with Mr Tumi.**

Researcher: How often are science learners bought to the zoo?

Mrs Lerato: It was only once when we took learners to the zoo because of the subject such as Natural Sciences. So most of the time we just take the whole school to the zoo.

Researcher: What are the reasons of brining learners to the zoo?

Mrs Lerato: We are taking learners for educational purposes. We want them to understand what some animals eat and where they live.

Ms Lebo: Also, for fun.

Mr Tumi: Mostly it is for fun because the way we arrange and organise it. It is less educational, because if we take the whole intersen, we are not focusing on certain topics or Grade. It is just for the learners to interact with the outside world, not specifically for educational purposes.

Ms Lebo: If we say it is only for Grade 7s, then it is for educational purposes.

Mr Tshepo: According to my understanding I beg to differ with Mr Tumi and Ms Lebo. Because since learners are unique according to my

understanding since well it is an educational trip so some have already been to the zoo since they come from different schools where they went to the school, those can go there for fun. But others going for the first time and see different types of animals and how they eat and live, they learn.

Researcher: What preparations have been done in class for the zoo visit?

Mr Tumi: Even if the educators want the trip to be educational, these kids do not take it seriously, moreover that sometimes we do not give them worksheet. So why waste our energy

Researcher: What are your views on learners learning in the zoo?

Ms Lebo: Mostly it's fun.

Mr Tshepo: Ultimately at the end it is for fun.

Mr Tumi: Even if the educators want the trip to the educational, but these kids do not take it seriously, more forever that sometimes we do not give them worksheets. Only those who are inquisitive might grasp one or two things that can use in live or learn.

Researcher: What do you think learners most enjoy when visiting the zoo?

Ms Lebo: Being out of the class it is an enjoyment for them.

All teachers laugh, as long as they are out of the class.

Ms Lebo: When we get inside the zoo they enjoy, and we allow them to be free and go around to see animals. While in the classroom we say things like, hey we are writing. So, at the zoo they become free and get to enjoy



themselves. So, they enjoy that freedom. (Some part translated from Sepedi to English).

Researcher: What do you think learners least enjoy when visiting the zoo?

Mr Tshepo: These learners are easily to be given tasks, maybe for example as I previously indicated you give them worksheets then it is not easy for them to learn, no no no.

Ms Lebo: They do not like writing.

MR Tshepo: Most of them.

Researcher: Okay so you saying if they have to go with worksheets it is boring for them?

Ms Lerato: Yes, because learners want to go see animals.

Mr Tumi: They see writing as a punishing thing. When you in class and have to give them work. Eish you are stressing them; it is a problem. And in their age, they should write and write and write and read, that's the exercise that they should do but they do not like it.

Researcher: What do learners normally do when they get to the zoo?

Ms Lebo: Sometimes we go with them as a group, so that they can see animals. But sometimes not always. But if there are small ones, the bigger ones want to go themselves.

Mr Tumi: Upon our arrival we find the guards and they group them since they will be many. So, they group us so that we must be controllable. It can be in senior or Grades. As teachers we will be there to ensure that they are controllable. Because at the zoo sometimes you do not

need to shout or make noise.

Researcher: Okay my second last question, is there any change of behaviour of learners after their visits to the zoo?

Ms Lebo: They are the same.

Ms Tumi: These kids just learn for the sake of learning, if you want practicality of it, is very difficult. Only a few can apply that.

Ms Lebo: But I think as teachers it makes a different because when you make an example, and if they did go there then you are able to tell me about something that they saw. Then it became easier. But for them behaviour they do not change

Ms Tshepo: Hai today's kids.

Researcher: My last question is, what type of pictures learners take when they are at the zoo?

Mr Tumi: Because of some reason's learners are not allowed to bring phones otherwise kids are kids

Researcher: Thank you very much for participating in this study.

#### Post-Interview

Researcher: My first question is what did learners enjoy the most at the zoo?

Ms Lebo: Because I was with them they enjoyed seeing the animals and I also took pictures. We had first thing when we walked in, we had a class where they taught them about reptiles. And the good thing was that what they taught them is what we have already taught them at school, so they were able to answer. So, they enjoy that a lot

Mr Tumi and Mrs Lerato: We agree with Ms Lebo, she has taken our words.

Researcher: Okay. What did learners enjoy the least at the zoo?

Ms Lebo: Mmm... I don't know if I am snitching on myself others because managing kids, other learners did not see the aquarium and others did not see the lion, because we walk a lot there. We spend so much time in class and learners had to have time to eat. So as teachers we did not take learners to go see other animals. So, some learners complained that they did not see a lion and others complained that they did not see the aquarium.

Researcher: So, learners did not enjoy not seeing other animals?

Ms Lebo: Yes.

Ms Tumi: Yeah, the issue with the some they did not enjoy is because they did not cover the whole zoo, because the zoo is large and as teachers we become exhausted.

Researcher: What are your views on learners' learning in the zoo?

Ms Lebo: Learners have learned because they talk about animals all the time since they visited the zoo.

Researcher: So Ms Lebo, what have you done to see that learners have learned?

Ms Lebo: Well... the intelligent learners still remembered what they saw at the zoo unlike slow learners, that showed me that learning took place.

Mr Tumi: The other thing is that we need to check when we are doing a syllabus that deals with those things, then we

take the learners to the zoo. Noe we are on "Matter and material" so the relevancy of it. If we go to the zoo, we should do it first team.

Ms Lebo: Yeah first team will be easy. Because now those who remembers is those intelligent ones. Others it is still mmm....

Researcher: Do you think the trip to the zoo influenced learners' attitude towards science?

Ms Lebo and Mrs Lerato: No they are still the same. They have not changed.

Researcher: Okay and overall, what would you say was the most memorable activity learners did during their visit to the zoo?

Ms Lebo: Well I will say they have enjoyed the freedom. In class we say to them do this and do that. And another teacher comes, "do not make noise". So unlike in the classroom, at the zoo they were free. The was time when we finished seeing animals, they were swings so we allowed them to go play. We gave them that freedom.

Researcher: Okay my last question. Is there anything that you would change for the future zoo trips?

Mr Tumi: If it is relevant to the syllabus then we can provide them with some worksheets.

Ms Lebo: Yes so that they can have something to right.

Researcher: Thank you very much for participating.

Mr Tshepo mentioned before we started recording that he did not go to the zoo, so he might not have anything to add.



**SCHOOL F**

**LEARNERS**

Learners' responses translated from Sepedi to English

**Pre-interview (Drawings)**

Researcher: Gave learners a paper and asked them to draw their favorite animal.

Researcher: Why did you draw the animal that you just drawn?

AA: I have drawn a lion.

Researcher: Why did you draw a lion?

AA: Because it is strong.

Researcher: BB what did you draw?

BB: I have drawn a lion.

Researcher: Why did you draw a lion?

BB: Because it is an animal that I love.

Researcher: Oohk. CC, what did you draw?

CC: Lion.

Researcher: Why?

CC: I want to see it at the Zoo.

Researcher: DD what did you draw?

DD: Lion.

Researcher: Why a lion?

DD: It is my family praise name.

Researcher: EE what did you draw?

EE: Because it is strong and it can eat other animals, it is a lion.

Researcher: Okay

**Pre-Interview**

Researcher: I am going to ask you questions.

What first question is, how old are you?

AA: Eight

Researcher: Okay and BB?

BB: Eight

Researcher: And CC?

CC: Ten

Researcher: Okay and KA?

KA: Eight

Researcher: Okay and PH?

PH: Ten.

Researcher: Okay. Now I am going to ask you if you are a female or a male?

Learners looked puzzled by the question.

Researcher: Female means you are a girl and male you are a boy.

AA: Female

Researcher: BB?  
BB: Female

Researcher: And CC?

CC: Female

Researcher: DD and you?

DD: Female.... no a male.

Researcher: Do not worry about it DD. EE and you

EE: Male

Researcher: Okay very good. The next question is, what grade are you in?

CC: Grade 3 C

Researcher: Okay and then you DD?

DD: 3C

Researcher: EE?

EE: Grade 3 C

Researcher: Okay and AA?

AA: 3C.

Researcher: And BB?

BB: 3C.

Researcher: Okay perfect. Now I am going to ask if you have ever failed a Grade? And let's respect each other with our responses. Have you ever failed a Grade?

AA: No

Researcher: BB?

BB: No

Researcher: And CC?

CC: NO.

Researcher: Okay and DD

DD: No

Researcher: And EE?

EE: Yes.

Researcher: Okay not a problem. My next question is what is your favorite subject and why? Who wants to start?

CC: Maths because it is fun.

Researcher: Okay and anyone?

EE: Life skills because I love to draw.

Researcher: Okay and anyone? Yes, DD.

DD: Sepedi because I want to be good at reading.

Researcher: Okay. Yes, BB?

BB: English because I love to draw.

Researcher: Okay and AA?

AA: English.

Researcher: Why English?

AA: Because I am aware to read it.

Researcher: Okay that's nice. My next question, how many times have you visited the Zoo? Who wants to start? Yes EE.

Learners in the background, yoooo so many times.

EE: 5 times and including the time when it was my sibling's party and I went with my uncle.

Researcher: Okay wow.

DD: One

Researcher: Okay, yes BB?

BB: Two

Researcher: Okay, another one?

CC: Six times and tomorrow will be the 7<sup>th</sup> time.

Researcher: Wow okay

AA: Even me tomorrow will be the 7<sup>th</sup> time.

Researcher: Yoyoyo okay. Since all of you went to the Zoo, my next question is what did you enjoy about the Zoo the last you visited. Let's hear BB.

BB: I enjoyed seeing a baboon.

Researcher: Okay and DD?

DD: I am enjoying seeing a crocodile.

Researcher: Okay and CC?

CC: I enjoyed seeing a giraffe.

Researcher: Okay.

EE: Zebra

Researcher: Okay

AA: I enjoyed seeing a gorilla making "Aaaaaa" sounds it makes us laugh.

Researcher: Okay. What did you least enjoy at the Zoo?



BB: Seeing a snake.  
Researcher: Okay and CC?  
CC: It does not have many shops.  
Researcher: Okay DD?  
DD: Walking around the Zoo.  
AA: Seeing many animals at a time.  
EE: You will be tired, and you must walk around to see Lions  
Researcher: What was the most memorable thing leaned in the Zoo?  
EE: What I loved was those big ice creams that had different colors.  
Researcher: Okay and CC?  
CC: I loved the ice cream that I started seeing that had many ices.  
Researcher: Okay  
BB: I loved seeing a milkshake  
Researcher: Okay DD?  
DD: I learned a route on getting to the Zoo.  
Researcher: Okay, let's hear AA.  
AA: I learned about lion because I did not know it.  
Researcher: Okay. How do you feel about the Zoo?  
EE: I love it because I always see it every day and it makes me happy.  
Researcher: Okay, CC.  
CC: I love it because I love seeing different animals.  
Researcher: Okay and DD?  
DD: I love it because I see lions and crocodile (In a strong voice).

BB: I love it because I see animals that I love.  
AA: I like it because I see a lion.  
Researcher: Okay. Since you guys are going to the Zoo tomorrow, what do you think you will be doing?  
AA: We are going to see animals.  
Researcher: Okay DD?  
DD: We are going to see animals.  
Researcher: Okay.  
BB: We are going to ride cable cars and see animals.  
Researcher: CC  
CC: We are going to see different animals.  
EE: We are going to see crocodiles hiding inside water. Even small ones hiding. (With excitement)  
Researcher: Crocodiles?  
EE: Not crocodiles but small animals. (With excitement)  
Researcher: Yoyo okay. Since you guys will be going with your teachers. What do you think teachers will have you do?  
DD: To move with them and listen to them  
Researcher: Okay and BB?  
BB: To listen to what they say and talk.  
Researcher: And CC?  
CC: Have manners.  
Researcher: Okay and EE?  
EE: They will want us to move with them and want our food such as meat.

EE: You will be scared eee  
Researcher: Okay and AA  
AA: To respect.  
Researcher: Since you guys have told me what your teachers will want you to do, my question is? What do you guys want to do? CC?  
CC: To allow us to see a lion and giraffe.  
Researcher: Okay, DD?  
DD: I want to see a crocodile and a lion again. (With excitement)  
Researcher: Yoo okay, BB?  
BB: I want to see a lion and crocodile.  
EE: I want to see a monkey and I want it to climb on my head and play with me. (With excitement)  
AA: I want to see a giraffe.  
Researcher: Okay. When you guys go to the Zoo you will be with your class, what do you think your class will do when they get to the Zoo? CC?  
CC: They will make noise.  
Researcher: Okay and DD?  
DD: They will make noise and look at animals and say eee... bona bona..... (Look look) (With excitement).  
Researcher: EE?  
EE: they will make noise in a way that you will want to cover your ears since they will say "Yeeeeeeaaaah" (Loud).  
Researcher: Yooooooo yes BB.  
BB: They will make noise

AA: They will be so happy.  
Researcher: Okay. How you feel about animals?  
DD: I feel very happy. (Not translated)  
Researcher: EE?  
EE: I feel I would go with my family to see the animals.  
Researcher: CC?  
CC: I feel impressed (Not translated).  
Researcher: Okay nice and BB?  
BB: I feel happy.  
Researcher: AA?  
AA: I feel happy.  
Researcher: Okay I have 2 last questions. Which animal do you want to say and why?  
DD: Lion because it runs fast.  
Researcher: BB?  
BB: Leopard because it runs fast.  
Researcher: EE?  
EE: I want to see a monkey busy eating a banana  
Researcher: CC?  
CC: A monkey because it is a funny animal.  
Researcher: AA?  
AA: I want to see a crocodile because it eats people.  
Researcher: My last question, what do you want to be when you grow up? Yes, BB?  
BB: Doctor  
CC: I want to be a doctor because I want to heal people.  
DD: I want to be a police officer, to shot people, evil people.  
Researcher: EE





EE: I want to be a police force because I want to arrest people and take them to jail.

Researcher: AA?

AA: I want to be a doctor so that I can help people.

Researcher: Thank you very much, we are done.

Post-Interview (Drawings)

Researcher: Why did you draw the animal that you have drawn? EE?

EE: I have drawn a monkey because it makes me laugh and happy.

Researcher: CC?

CC: Giraffe because it is tall, and I will be able to jump on top of it

Researcher: DD?

DD: Elephant because it can push you far away

Researcher and learners laugh after DD responded

Researcher: Okay, BB?

BB: Cheetah because it is my family praise name.

Researcher: Oh nice, AA?

AA: Giraffe because it had a long neck.

Post-Interview

Researcher: Welcome learners, we are here for our second interview. You can use English or your home language to answer me. My first question is, what did you enjoy most in the Zoo and how was the visit to the zoo? EE?

EE: I enjoyed mostly seeing monkeys because it was interesting to see a monkey eating its own

feces and that made me laugh

Researcher: Okay MB?

CC: To see a cheetah.

Researcher: Okay and BB?

BB: To see a Tiger.

Researcher: Okay and DD?

DD: An elephant (With excitement)

Researcher: And AA?

AA: What do they called it... A monkey because it was eating its own faces and that made me laugh.

Researcher: Okay my second question is, what did you least enjoy in the Zoo? Yes DD?

DD: To walk around.

Researcher: Okay EE?

EE: The big roads around the Zoo.

Researcher: Okay let's hear CC.

CC: To walk too much and we were tired.

Researcher: BB?

BB: To walk around.

Researcher: And AA?

AA: To eat too much.

Researcher: If you could what would you change about your trip? DD?

DD: I would not go back because I will see what I have seen already.

Researcher: Yes BB?

BB: I would not want us to walk around a lot.

Researcher: Yes CC?

CC: I would not want to see what I have seen before.

Researcher: Okay EE?

EE: I would not like to walk around like I did before and sweat.

Researcher: Thank you and AA?

AA: Teachers will shout at us.

Researcher: Okay, what have you learnt from the Zoo? Yes, CC?

CC: it was my first time seeing a tiger.

Researcher: Yes AA?

AA: it was the first time seeing a baboon.

Researcher: Okay and DD?

DD: It was my first time seeing a baboon eating its own faces.

Researcher: Okay and EE.

EE: I did not know there was a white Tiger and it was scary.

Researcher: Okay and BB.

BB: I also did not know there was a white Tiger.

Researcher: Okay, where the things you wanted to do but did not do if the is? Yes, CC?

CC: I wanted to go to the slides.

Researcher: DD?

DD: I wanted to play around.

Researcher: Okay and EE?

EE: I wanted to blush a monkey.

Researcher: AA?

AA: I wanted to ride a cable car.

Researcher: And BB?

BB: I also wanted to ride a cable car.

Researcher: Okay, and then are the things you

would like to go back to do/see? DD?

DD: I want to go see a Lion.

Researcher: AA?

AA: I would like to see an Elephant.

Researcher: Can I ask why?

DD: I want to see a Lion making sounds such as Raaaarrrrr....

Researcher: And EE?

EE: I want to see a Tiger because it run as fast like a Cheetah.

Researcher: CC?

CC: I want to see an elephant because I didn't see it. (Not translated)

Researcher: And BB?

BB: An elephant because it is big.

Researcher: Okay. How do you feel about animals? DD?

DD: I was very happy (Not translated)

Researcher: Okay EE?

EE: I was very happy beyond.

Researcher: And AA?

AA: I was happy

Researcher: And CC?

CC: I was happy happy happy super happy (Not translated)

Researcher: And BB?

BB: I was super happy

Researcher: Which animal/s did you enjoyed seeing and why? EE?

EE: Monkey, it was running around and making sounds such as rrrrrrrrr.....

Researcher: Okay, DD?

DD: Elephant because it is old.



Researcher: Okay and AA?	have you been teaching?	done in class for the zoo visit?	some learners eat before going, such as ice creams, so if that does not respond well in their body they might get sick. Because parents give them a lot of money, so they will buy 1 and 5 things they have not eaten before.
AA: I am still thinking.	Tshidi: 2 years.	Tshidi: Our date of going to the zoo has been booked and we have collected money from our learners. Basically, we are ready for the visit.	
Researcher: Okay and BB?	Researcher: Which Grades do you teach?		
BB: Elephant because it was saying woooooo...	Tshidi: I teach Grade 3, say foundation phase.	Researcher: What are your views on learners learning in the Zoo?	Researcher: Okay, what do learners normally do when they get to the zoo?
Researcher: Okay and CC?	Researcher: Okay and in foundation phase which subjects do you have?	Tshidi: Eeee... According to my understanding, not all learners go to learn at the Zoo some go for fun. Because the next day when you ask them what they saw, what what, what does it eat. Since at the Zoo they have tour guides learners do not concentrate when they teach them since they do not remember when you ask them. So, it shows that some learners go for fun only while learners go for learning. Even in the classroom, some learners come to school because of parents not for myself.	Tshidi: They become curious; they want to see different animals that they have been taught about. There is curiosity in them. What can I say, learners are always eager since they going to the zoo, they want to see different animals.
CC: Sea lion, it was swimming inside the water and making sounds like vuuvuu..	Tshidi: We have 4 subjects. Maths, Life Skills, English and Home language.		
Researcher: Okay.	Researcher: When did you start teaching those subjects?		
AA: Snake because it was busy hiding.	Tshidi: Ever since I started with teaching.		
Researcher: My last question is, when you grow up what do you want to be? Yes, DD?	Researcher: Which group of learners/classes do you usually take to the Zoo?		Researcher: Is there any change of behaviour of learners after their visit to the zoo?
DD: I want to drive an airplane.	Tshidi: We take all foundation phase learners; we do not mix them with intersen because those ones are old.		Tshidi: "Teacher laughs" ... hahahah. I think there will be change of behaviour. First change of behaviour will be they will know different type of animals and next time when you want them to draw an animal, they will draw an animal that they have not drawn before. Like you saw with a drawing task you gave them, they all drew a lion, next time you give them this task, they will not draw a lion all of them since there will be something they have developed at the zoo and it will change the way they behave, even the knowledge of the learners will change somehow, that is how I think.
Researcher: Okay CC?		Researcher: Okay,	
CC: Doctor to work in the hospital and heal people.	Researcher: How often do you take learners to the Zoo because of science subjects which will be Life Skills in foundation phase?	Researcher: What do you think learners most enjoy when visiting the Zoo?	
Researcher: Okay and AA?	Tshidi: Yes, we do take them to the Zoo often, sometimes its' because when we ask them to draw a specific animal, they only see it in a book. Most learners draw what they do not know with their naked eye. So, learners do want to see animals live.	Tshidi: "Teacher laughs" ... I think they enjoy being together and playing together. They like playing, so being together to them is fun.	
AA: Nurse.		Researcher: So, anything that involves playing?	
Researcher: Okay BB?	Researcher: What are the reasons of bringing learners to the Zoo?	Tshidi: Everything that involves playing is fun, and sometimes I do not blame them because it is their age they are supposed to play.	
BB: I want to be a doctor because I want to help people.	Tshidi: Sometimes it is for learners to explore and have fun. Not to always be stereotyped with school things only and have fresh air.	Researcher: What do you think learners least enjoy when visiting the Zoo?	Researcher: Are learners allowed to take phones with them, and if they are, what type of pictures learners take when they are at the zoo?
Researcher: Okay and EE?			
EE: I want to be a police officer and help people. And shot criminals and say, "hands up".			
Researcher: Thank you for participating.			
<b>TEACHERS</b>			
<u>Pre-Interview</u>			
Researcher: Okay mem, do you have questions before we start?			
Tshidi: No, you go first. (Not translated)			
Researcher: My first question is how long	Researcher: What preparations have been	Tshidi: I think they will not enjoy if one of them gets sick. Because	Tshidi: They do not bring phones, but they take photos with



camera guys at the zoo. And they prefer taking pictures near their favourite animal.

Researcher: Okay. Thank you very much for agreeing to take part in this study.

Post-Interview

Researcher: Hello Mem, I am here for our post interview. My first question is. What did learners enjoy the most at the zoo?

Tshidi: Iyaaaa, I have seen that learners have enjoyed and a lot. This thing of learners going out it changes them somehow. Because when we came back to show that they have enjoyed, they were telling me what they have seen. Even in the following day I asked them what they have seen at the zoo, they told me what they saw and some animals they did not know them. Having learnt that there is a different between cheater and tiger and it is important for them and they loved it.

Researcher: Okay, what is it that learners enjoy the least at the zoo?

Tshidi: I think walking too much because some could not continue anymore, so we could not see all animals since some learners were tired. I wish in future they can use... maybe hire cars, small cars found at the zoo maybe ride them instead of walking. Some learners have a challenge of walking too much maybe it is because they are not used to walking too distance.

Researcher: Do you think learners have learnt anything from the zoo?

Tshidi: Most learners could not differentiate

between a cheetah and a tiger in previous activities they have completed in class prior to the zoo visit. But after the visit to the zoo, I gave them the same activity and most learners did well.

Researcher: Do you think the trip to the zoo influenced learners' attitude towards science?

Tshidi: Yes, you know in which sense, in the sense that they are aware to see were animals live and how they live. For example, with a lion there is a reason why it is situated every far from where visitors can easily see it or be near it. When we explain to the learners, we tell them that the lion is far because it is very dangerous. And even me I wish the people that work at the zoo can walk with us so that we can ask them questions when we do not understand. They were some questions that learners asked, and I personally could not answer them.

Researcher: Okay and then overall, what would you say was the most memorable activity learners did or enjoyed at the zoo?

Tshidi: Going out, going out, going out... For them going out yoooo... they have enjoyed most because they have started their excitement since from the bus on our way to the zoo. They have sung from the school until we arrived at the zoo. I think going out should be done more often so that learners can get used to it. Keeping them only at the school is not growing them, what can I say, it is not giving them more knowledge of other things. In life skills Grade 3 we talk about pictures in the book, but sometimes we have to

go out and experiment. This thing of staying at school I am not supporting it.

Researcher: Okay, is there anything that you would change for the future zoo trips?

Tshidi: Yes, what I would like to see being changed is to see being provided us with tour guides. So that when learners have questions about certain animals they can ask, and the tour guides can answer them in the right way. Because us the teachers do not have that information that tour guides would have you see. Some information about animals is lacking.

Researcher: Okay thank you so much mem.

SCHOOL G

LEARNERS

Pre-interview (drawings)

Researcher: What have you drawn and why did you draw it? Yes, FF.

FF: I have drawn a cat.

Researcher: Why

FF: It is beautiful.

Researcher: Okay. Anyone? Yes, GG

GG: I have drawn a dog.

Researcher: Why?

GG: Because dogs love strangers and run after them.

Researcher: Okay. HH?

HH: A springbok

Researcher: Why?

HH: it likes to run

Researcher: Okay. II you?

II: I have drawn a lion.

Researcher: Why a lion.

II: Because it is my favourite

Researcher: Okay and JJ?

JJ: I have drawn a lion.

Researcher: Why?

JJ: I like its dots dots.

Researcher: Okay thank you

Pre-interview

Researcher: Okay thank you learners. I am going to ask you questions. My first question is how old are you? Yes, FF.

FF: 8 years.

Researcher: GG.

GG: 9 years.

Researcher: HH?

HH: 9 years.

Researcher: Okay II.

II: 10.

Researcher: Okay JJ.

JJ: 8 years.

Researcher: My next question is, are you a female or a male. When you are a female means you are?

All learners answer: A girl.

Researcher: And when you are a male means?

All learners answer: A boy.

Researcher: Okay. Are you a male or female? FF.

FF: female.

Researcher: GG?

GG: Female.

Researcher: Okay, HH?

HH: A male

Researcher: Okay II?





II: A male.  
Researcher: Okay JJ?  
JJ: Female.  
Researcher: Okay. Which Grade are you? I will start with JJ.  
JJ: Grade 3B.  
Researcher: II?  
II: Grade 3 A.  
Researcher: Okay KO.  
HH: 3 B  
Researcher: GG?  
GG: 3 A.  
Researcher: FF?  
FF: 3A  
Researcher: Okay have you ever failed a subject? JJ?  
JJ: No  
Researcher: Okay, II?  
II: Yes.  
Researcher: Okay and HH?  
HH: No  
Researcher: Okay GG?  
GG: No.  
Researcher: Okay, FF?  
FF: No  
Researcher: Okay, what is your favourite subject and why?  
II: The subject that I love is maths.  
Researcher: Why?  
II: Because it is easy to me.  
Researcher: Okay FF?  
FF: English.  
Researcher: Why?  
FF: It is great to read it.  
Researcher: Yes, GG?  
GG: I love English.  
Researcher: Why English.  
GG: Because it is very fun to read (Not translated)  
Researcher: Okay and HH?  
HH: Sepedi.  
Researcher: Why Sepedi?  
HH: It teaches us the language spoken at home.  
Researcher: Okay JJ?  
JJ: English.  
Researcher: Why?  
JJ: It teaches me to be able to speak to white people.  
Researcher: Okay. How many times have you visited the zoo? FF.  
FF: Seven  
Researcher: You have visited the zoo seven times?  
FF: Yes.  
Researcher: Okay. And II?  
II: Five times. Sometimes I went with my family  
Researcher: Okay. GG?  
GG: Two  
Researcher: Okay JJ?  
JJ: Two  
Researcher: Okay and HH?  
HH: Six  
Researcher: Okay. You guys have visited a zoo several times it shows. What did you enjoy the most when you visited the zoo? GG?  
GG: Because I can learn about animals. (Not translated)  
Researcher: Anyone? JJ.  
JJ: Elephant.  
Researcher: Okay you enjoyed seeing an elephant. Yes II.  
II: Cheetah  
Researcher: What about the Cheetah.  
II: It is beautiful, and I like it.  
Researcher: Okay, and HH?  
HH: Giraffe.  
Researcher: What about a Giraffe  
HH: It eats the trees.  
Researcher: Okay and FF?  
FF: I like it because I see different kinds of animals (Not translated)  
Researcher: Okay. What is it that you did not enjoy most when visiting the zoo? FF.  
FF: Crocodile and snakes.  
Researcher: Okay to see a crocodile and a snake?  
FF: Yes  
Researcher: Okay GG.  
GG: I do not like to see a snake  
Researcher: Why?  
GG: Because it is scary.  
Researcher: Yes, JJ?  
JJ: To see a snake.  
Researcher: Okay. Others... Yes II.  
II: I do not like to see a baboon (Not translated)  
Researcher: Okay and HH?  
HH: Hippopotamus  
Researcher: You did not like to see it?  
HH: Yes  
Researcher: Okay and then, what was the most memorable thing that you learned in the zoo? Yes, HH.  
HH: Fish  
Researcher: You have learnt about the fish?  
HH: Yes  
Researcher: Okay, anyone?  
GG: I like pigeons.  
Researcher: Okay what did you learn about pigeons?  
GG: That pigeons eat fish  
Researcher: Yes JJ.  
JJ: I have learnt about the monkey  
Researcher: What about the monkey.  
JJ: that the monkey is funny.  
Researcher: Yes, FF.  
FF: I have learnt that the gorilla is the same as people.  
Researcher: Okay, II is there something you remember?  
II: I remember about..... long pause  
Researcher: What do you remember about what you learnt?  
II: I remember that round thing... A tortoise that it is beautiful I like it and like its shell as well.  
Researcher: Okay. How do you feel about the zoo?  
GG: I like the zoo because of animals.  
Researcher: II?  
II: I like the zoo because it has animals that are different and also animals that we do not know.  
Researcher: Okay nice, FF you.



FF: I love the zoo because its animals show us our beauty

Researcher: Okay, JJ and you?

JJ: I love the zoo that it is beautiful.

Researcher: And HH?

HH: I love that the zoo shows us animals that we do not know.

Researcher: What do you think you will do on the trip to the zoo? Yes, JJ.

FF: I am looking forward seeing many animals at the zoo and learn what makes them happy.

Researcher: Okay and HH?

HH: I want to see if animals have houses like us and if they do not, where do they go when it is raining.

Researcher: Okay and II.

II: I want to see and learn about many animals found at the zoo. I am going to ask the zoo guide if animals can be bored, stressed or sad.

Researcher: Okay and FF?

FF: I want to ride a big wheel.

Researcher: Okay, and HH?

HH: I want to ride a cable car.

Researcher: What do you think teachers will have you do? FF.

FF: They will want us to first walk around and see animals and only when we are hungry we can eat.

Researcher: Okay, GG?

GG: They will want us to listen when people tell us about animals.

Researcher: Okay, II?

II: They will want us to listen to animals' people when they teach us and later eat and rides.

Researcher: Okay nice, JJ?

JJ: They will want us to look at animals first.

Researcher: And HH?

HH: They will want us to watch animals before we eat.

Researcher: Okay you guys have told me what teacher will want you to do, my question is? What do you want to do at the zoo? Yes, GG.

JJ: I want to go on a cable car (Not translated)

Researcher: Okay FF?

FF: I am expecting to go to the zoo to learn how animals live, what they eat and what they drink. I also want to learn which animals I am safe when near them.

Researcher: Okay yes, II?

II: I want to ride a cable car, and train.

Researcher: Okay and JJ?

JJ: I want us to play around first.

Researcher: Okay and HH?

GG: I want to go to the zoo, learn and write different names of the animals, learn what they eat and what they are allowed to drink.

Researcher: Okay. What do you think your class will do when they get to the zoo? Yes, GG.

GG: Our teacher will teach us about our class.

Researcher: Okay others? Yes, JJ?

JJ: Our teacher will ask our class what they have seen.

Researcher: Okay and II?

IN: Our teacher will ask us about things and also about what we have seen.

Researcher: Okay and FF?

FF: Our teacher will tell our class not to make noise at the zoo.

Researcher: HH?

HH: Our teacher will teach our class about the animals that we have seen.

Researcher: Okay. How do you feel about animals? GG?

GG: I feel happy about the animals.

Researcher: Okay, FF?

FF: They are beautiful, and I like them.

Researcher: Okay and II?

IN: I like animals.

Researcher: JJ?  
JJ: I like animals.

Researcher: Okay and HH?

HH: I like animals.

Researcher: Are you not scared of animals.

All learners answered: NO, we love them.

Researcher: Okay, which animal/s do you want to see and why? JJ?

JJ: I want to see a monkey.

Researcher: Why?

JJ: Because I want it to make laugh.

Researcher: Okay and HH?

HH: Crocodile

Researcher: Why?

HH: I like it when it moves inside the water.

Researcher: Okay, GG?

GG: I want to see an elephant. (Not translated)

Researcher: Why?

GG: Because it is so funny when..... I want to see its trunk. (Not translated)

Researcher: Okay, yes FF?

FF: I want to see a peacock.

Researcher: Why?

FF: Because it is so beautiful, and it has many colours. (Not translated)

Researcher: Okay II?

II: I want to see snakes. (Not translated)

Researcher: Why?

II: Because too scary me. (Not translated)

Researcher: I want to ask you when you pass Grade 3 which Grade do you go to?

Learners answered all at same time: Grade 4, then 5, 6, 7, 8, 9, 10, 11 and matric.

Researcher: Then after matric?

Learners answered all at same time: College or university

Researcher: Good. My question is, when you grow up. Do you want to work in science?

Learners answered all at same time: How science.

Researcher: You can work as a doctor, can be a nurse, engineer, work at the Zoo and botanical. You can even be teacher that teachers' science subjects. Yes, II?

II: Doctor

Researcher: Why?



II: Because I like it.  
Researcher: GG?  
GG: I want to be a dentist  
Researcher: Why?  
GG: Because I want to help the people with their teeth.  
Researcher: Okay others, JJ?  
JJ: I want to work at the zoo?  
Researcher: Why?  
JJ: I like the animals at the zoo.  
Researcher: Oka and HH?  
HH: I want to be a police officer.  
Researcher: Why?  
HH: So that I can catch thieves.  
Researcher: Okay and FF?  
FF: I want to be a nurse.  
Researcher: Why?  
FF: To help many people.  
Post-interview  
Researcher: Hello guys, the first question I am going to ask is what have you drawn and why? FF I will start with you.  
FF: I have drawn a monkey.  
Researcher: Why?  
FF: Because it looks just like people.  
Researcher: Okay, another one?  
II: I have drawn a fox.  
Researcher: Why a fox?  
II: Because I like it.  
Researcher: Okay another one. Yes, GG.

GG: I have drawn an elephant. (Not Translated)  
Researcher: Why an elephant?  
GG: Because it is so big. (Not Translated)  
Researcher: Anyone?  
JJ: A monkey.  
Researcher: Why a monkey?  
JJ: Because it is funny.  
Researcher: Okay, HH?  
HH: Crocodile  
Researcher: Why a crocodile?  
HH: I like it when it moves inside the water.  
Researcher: Okay.  
Post-interview  
Researcher: What did you enjoy most in the zoo and how was the visit to the zoo? II?  
II: I enjoyed seeing snakes.  
Researcher: Mmm... okay, anyone?  
GG: I enjoyed seeing fish.  
Researcher: Okay, JJ?  
JJ: Monkey.  
Researcher: Why monkey JJ?  
JJ: I like it.  
Researcher: Okay, FF?  
FF: I enjoyed riding swings.  
Researcher: Okay HH?  
HH: I enjoyed riding a train.  
Researcher: Okay. What did you enjoy least in the zoo? Yes, GG?  
GG: I enjoyed seeing a gorilla with my friends at the zoo. Some of my friends said a gorilla looks similar to us people. I agreed with

my friends, but a gorilla is ugly and us people we are not ugly like a gorilla. My friends agreed with me.  
Researcher: Okay FF?  
FF: To see a crocodile.  
Researcher: Okay, yes JJ.  
JJ: I liked looking at the animals with my friends and teachers at the zoo. It was funny and exciting to look at the monkeys because they were making interesting sounds and movements. Me and my friends were laughing and also scared when the monkeys came near the fence.  
Researcher: YES, HH?  
HH: To see a giraffe.  
Researcher: Okay what about you II?  
II: I did not enjoy seeing a fish.  
Researcher: Okay, if you could what would you change about your trip? YES, FF?  
FF: I want to see lions and buffalo.  
Researcher: Okay GG?  
GG: I want to see the giraffe.  
Researcher: Yes, JJ.  
JJ: I want to see a monkey.  
Researcher: Okay, II?  
II: I want to see a cheetah.  
Researcher: Okay and HH?  
HH: I want to see a crocodile.  
Researcher: Okay. What have you learnt from the zoo? Yes, HH?  
HH: I have learned about a fish and a cheetah. A cheetah is a fastest animal at the zoo and a fish can

breathe well while inside the water.  
Researcher: Okay, yes JJ.  
JJ: Giraffe  
Researcher: What about a giraffe?  
JJ: It is very tall.  
Researcher: GG?  
GG: I learned about the fish and an elephant. A fish can be eaten by a pigeon and an elephant trunk is very long and can use it for breathing and grabbing things like food.  
Researcher: Okay, HH?  
HH: Cheetah.  
Researcher: What about it?  
HH: It runs very fast.  
Researcher: Okay, II?  
II: I Have learnt about the trunk of an elephant.  
Researcher: Okay, where the things you wanted to do but you did not?  
FF: Yes, we did not ride a cable car and big wheel  
Researcher: Yes GG?  
GG: we didn't see a giraffe. (Not translated)  
Researcher: JJ?  
JJ: We did not ride a cable car.  
Researcher: II?  
II: We were promised that we will ride a cable car but did not.  
Researcher: Okay, HH?  
HH: We did not ride a cable car.  
Researcher: If you could go back to the zoo, are there things you would like to go back to do/see? FF?  
FF: I would want to go see a giraffe.



Researcher: Why?  
 FF: Because some of us did not see it.  
 Researcher: Okay, GG?  
 GG: Giraffe.  
 Researcher: Why?  
 GG: Because I would like to see how it is tall. (Not translated)  
 Researcher: Okay, JJ?  
 JJ: Lion.  
 Researcher: Why a lion.  
 JJ: Because we did not see it.  
 Researcher: II?  
 II: I would like to go back and see a sea lion because I did not see it.  
 Researcher: HH?  
 HH: A fish.  
 Researcher: WHY?  
 HH: I like it when it is busy moving inside the water.  
 Researcher: How do you feel about animals?  
 II.  
 II: I love animals.  
 Researcher: Okay JJ?  
 JJ: I love them.  
 Researcher: GG?  
 GG: I love animals.  
 Researcher: FF?  
 FF: I love them.  
 Researcher: HH?  
 HH: I love animals  
 Researcher: Which animal/s did you enjoy seeing and why? II?  
 II: Snakes.  
 Researcher: Why?  
 II: Because it is scaring me, and I like it.  
 Researcher: GG?  
 GG: Crocodile.

Researcher: Why?  
 GG: Because it is so long.  
 Researcher: JJ?  
 JJ: Monkey.  
 Researcher: Why?  
 JJ: I like it; it looks like people.  
 Researcher: FF and you?  
 FF: Elephant.  
 Researcher: Why?  
 FF: Because it is so big.  
 Researcher: HH?  
 HH: Snakes.  
 Researcher: Why?  
 HH: I like it when it moves around the wood at the zoo.  
 Researcher: When you complete school where do you want to work?  
 II?  
 II: Doctor.  
 Researcher: GG?  
 GG: A dentist.  
 Researcher: Okay, HH?  
 HH: I want to work at the airport.  
 Researcher: And JJ?  
 JJ: I want to be a nurse.  
 Researcher: And FF?  
 FF: lawyer.  
 Researcher: Thank you for participating in this study.  
**TEACHERS**  
Pre-interview  
 Researcher: Mem thank you for agreeing to take part in this study. Do you have any questions before we start?  
 Zinhle: No, I am good, we can start.  
 Researcher: How long have you been teaching

Zinhle: 3 years.  
 Researcher: And which Grades do you teach?  
 Zinhle: Grade 3.  
 Researcher: Which since you started teaching it has been Grade 3?  
 Zinhle: Yes.  
 Researcher: Which subjects are taught in Grade 3 at your school?  
 Zinhle: IsiNdebele, Life Skills, Maths and English.  
 Researcher: Okay. How are life skills subject divided?  
 Zinhle: Social, personal well-being, physical education and creative arts.  
 Researcher: Does it includes science?  
 Zinhle: Yes, life skills do include science.  
 Researcher: Okay, when you take learners to the zoo, do you decided that you taking them specifically for life skills?  
 Zinhle: It depends on the curriculum which term covers what. Sometimes you find that only Grade 2's curriculum covers what we will be doing at the zoo. For this excursion, the zoo experience is not covered in our curriculum.  
 Researcher: How often are science learners bought to the zoo, in this case for life skills.  
 Zinhle: Last year (2018) we did take learners specifically for life skills. But we did not go to the zoo, we went to mystic monkeys' park, it is more like the zoo.  
 Researcher: Okay really, where is it located?

Zinhle: Rust de Winter side, they specialise with monkeys and feathers.  
 Researcher: Okay. You have answered me partly earlier. My question is, what are the reasons of brining learners to the zoo?  
 Zinhle: Because learners will learn about different kind of animals, how they live and their social wellbeing. Apart from that, we orient them about wild animals, because domestic animals they know them from home, and some of the curriculum covers wild animals and domestic animals. Since they see domestic ones we also want them to see wild ones, especially the big.  
 Researcher: What are your views on learners learning in the zoo?  
 Zinhle: Learners do learn because normally when we come back we normally have questions for them such as, " what did you see" and all that. Some activities we normally do them after the trip.  
 Researcher: Mmm... okay. What do you think learners most enjoy when visiting the zoo?  
 Zinhle: Yooo...., Monkeys they like them. Like they really enjoy them. Like even now they wanted to see a gorilla what what what...  
 Researcher: Oh, since they are going to the zoo?  
 Zinhle: Yes, and some ducks, they say ducks' dances and they like that.  
 Researcher: Okay. What do you think learners least enjoy when visiting the zoo?



Zinhle: Mmm... Not that I can think of. No there is nothing.

Researcher: So, when you say zoo o the learners they like everything?

Zinhle: Yes

Researcher: Okay. What do learners normally do when they get to the zoo?

Zinhle: Mmm... it all depends on the time we arrive at the zoo. Like for this trip, we are going to arrive around 11, so first thing they will eat since they will be hungry. Normally we eat at 9H00 at school (Lunch time). So, since we will go to other places before the zoo, they will be hungry when they get to the zoo. If we were going to start at the zoo, they will move around the zoo first, see animals and the zoo park and then after eating.

Researcher: When learners come back from the zoo, is there any change of behavior of learners?

Zinhle: Iyoo.. there is change, when they come back the noise is higher. They will be narrating about the zoo, "did you see that", "What what animal did that". Yoo you cannot control the excitement. You will see that they have enjoyed. They will chat about it. Even when they come back, those who did not go to the zoo, they will see that they have missed out a lot.

Researcher: When they go to the zoo, are they allowed to bring phones to take pictures?

Zinhle: No there are still young. There was one last time that came with it, but it is a rare case. We just use our phones are teachers and then

send them to the parents.

Researcher: So, you give the learners your phone to take pictures?

Zinhle: No, I take the pictures myself. Learners will pose with a certain animal and will take a photo and send to parents via our parents whatsapp group.

Researcher: Thank you very much, we are done.

#### Post-interview

Researcher: Hello mem Zinhle welcome, I only have 6 questions for our post interview. What did learners enjoy the most at the zoo?

Zinhle: Yoooo (with excitement), the snakes. They enjoy them most and could not stop talking about them. Even in the bus they were saying snakes this and that, did you see what other snakes were doing? They were also talking about snakes' sizes.

Researcher: Okay, what did learners enjoy the least at the zoo?

Zinhle: They did not like the fact that they could not ride. Most learners had money for the rides. But when we arrive at the zoo, most of the rides were out of order. So, they only ridden the smaller ones that did not cost much, around R 2 and R 8. Learners did not know what to expect so they enjoyed anywhere. But the parents complained about rides since there were part of the package. And in the zoo website they have listed many rides.

Researcher: After this zoo trip, what are your views on learners' learning in the zoo?

Zinhle: I will say they do learn, because with us right now we busy with

fishes, it is in our curriculum now. But learners were not oriented well in this regard about the fishes. And also, because we did not have a guide, our learners were just moving around the zoo. No-one was available to tell us about different kind of fishes, "These type of fishes eats this and that", and learners really needed that. And this this curriculum about fishes we find it in English.

The teacher showed the researcher the English textbook that is covering the fish content. The content covered type of fishes, and the body parts of the fish.

Researcher: Oohk, okay.

Zinhle: Outdoor learning is good and is motivating for learners. Like you get to see even those learners you think they are quiet in class, talking and asking a lot of questions at the zoo. Learners were excited at the zoo. Yes, so if we had a tour guide, it was going to be easy for them to explain to the learners about different kinds of fishes. It was going to be easy to explain to learners about things that they have seen and explained to. So, a tour guide was really needed. Even myself as a teacher, I do not know much about fishes, so if there was an expert to explain further learners would have known more about fishes.

The teacher shows the researcher the textbook again where learners are required to label a fish.

Researcher: Okay.

Zinhle: Yes, and the learners did well in the post activity I gave them about the fish even though they were not oriented by the zoo

educators. The information boards helped us teachers to be able to explain to the learners. The learners were able to label the parts of the fish and their fish drawings were very colourful. One learner even asked a question I found interesting after the activity that, she wondered when observing the fish at the zoo on how the fish breathe and does not drown inside the water. I was impressed that my learners were asking me questions beyond the activity.

Researcher: Okay. Do you think the trip to the zoo influenced learners' attitude towards science?

Zinhle: Yoo the characters I have seen (Teacher and researcher laughs). Those ones that I know as quiet learners in class, they were different learners, I think outdoor learning is good for learners. Like you get to see even those learners you think they are quiet they talk a lot outside. Even the games they were playing, they were too excited. As teachers we decided to leave the learners do what they want without any fuss. Learners were excited. We were just checking them if they safe and not getting hurt. Other than that, they were free. Even the Grade R learners. Learners really need that. I could say learners have enjoyed and I have seen different kinds of characters I did not know. Learners had lot of excitement around the zoo. And since most parents came with us, it made things easier for us. Most parents came with us in a bus and they helped us manage the discipline.

Researcher: Overall, what would you say was the most memorable





activity learners did during their visit to the zoo?

Zinhle: Woooo... I would not say because they enjoyed most things. But mostly are the rides and seeing the snakes.

Researcher: So, you still in the snakes?

Zinhle: Yeah yoooo in the snakes learners really enjoyed. But with me, it would have been nice especially Grade 6s to go to aquarium, it would have been nice. Because now we will be teaching about aquarium.

The teacher shows the researcher a part in the textbook where learners will be learning about the aquarium.

Zinhle: So, learners would know when we talk about sea shells what is it, they would what is a sea shell in general if they saw it. Because normally I download it and show it to them. But it would have been nice if they saw it rather.

Researcher: Okay my last question. Is there anything that you would change for the future zoo trips?

Zinhle: Yes. Aaa future wise. Only the zoo or the school trip to the zoo?

Researcher: School trip to the zoo.

Zinhle: We had a meeting where we were reflecting on our trip to the zoo. Most of the things as a school we complained about were tour guides. And again, animals are very scarce is not like our previous zoo trips. Like for example, we only saw only 2 elephants only and we were expecting to see many elephants and other animals as a family. And again, as a school our complained was safety of the learners, since now at

the zoo they allow people to drink. Our learners were sitting next to a group of ladies who were drinking, and those ladies were noisy, that made our learners to shift the focus to them. And after that they were alcohol battles around and some of our learners ended up playing with them, so safety is not there. And since the zoo caters for the young ones that makes it a challenge, if they were catering only for old people then it would make sense. It also makes it a wrong impression to our learners since it's a school excursion and our learners become expose to such. We educate our learners about the disadvantage of alcohol and the next thing we take them to a place that expose people who are drinking, that was not nice at all.

Researcher: Thank you very much for participating in this study.