

**MENTORING NOVICE NATURAL SCIENCE TEACHERS: A CASE STUDY IN THE
GAUTENG PROVINCE**

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DECLARATION

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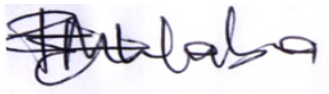
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I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

I further declare that I submitted the dissertation to originality checking software and that it falls within the accepted requirements for originality.

I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.



12 SEPTEMBER 2019

SIGNATURE

DATE

DEDICATION

I dedicate this dissertation to my mother, Ms Mbazima Hlekulani Chauke, my husband Themba and my dear children, Ntwanano Agrey, Amukelani Blessing and Vutlhari for their support throughout this journey.

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ABSTRACT

The study was undertaken because of the need to understand the impact of mentoring novice Science teachers within the Gauteng Province. The study was conducted within the Gauteng Province, because there have been many debates and concerns on the need to come up with ways of improving the comprehension of science in secondary schools in the Gauteng Province. The purpose of this study therefore was to understand the effects and impact of mentoring novice natural science teachers within the Gauteng Province. The study therefore, utilised qualitative research approach and this was motivated by the need to understand the perceptions and experiences of the research participants. Furthermore, purposive sampling was utilised as the sampling method where the novice science teachers and relevant teachers were selected to be part of the sample. Through the use of the semi-structured interview as the data collection method, it was discovered that mentoring of novice teachers refers to the method of empowering new teachers to be effective in their work-related tasks to become true professionals in the academic profession. The study concluded that there are a number of mentoring initiatives and mechanisms utilised to assist novice teachers. Amongst these programmes training, skills development and technical support to enhance communication skills and manage the curriculum are underscored. The study concludes that mentoring of novice teachers is important within the Gauteng Province for it raises awareness, leads to expert Science teachers equipped with a wide range of skills to achieve the best results within the classroom. It also capacitates the novice teacher on how to handle laboratory equipment and chemicals to benefit learners. The study also gathered that mentoring has a direct impact on novice Science teachers. It leads to the creation of an effective and excellent teaching environment, results in higher levels of teacher retention and improves teachers' service delivery. It also strengthens the emotional and psychological well-being of teachers. The study therefore, recommended that there is need for training and development and a budget allocated towards enhancing the mentoring of novice Science teachers.

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LIST OF ACRONYMS

ISPFTED	Integrated Strategic Planning Framework for Teacher Education Development
NQF	National Qualifications Framework
DBE	Department of basic Education
FET	Further Education and Training
HOD	Head of Department

CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The prevailing situation of novice teachers' attrition especially within the South African educational system has had far-reaching implications. Within this perspective, this research seeks to understand this discourse in detail and attempts to proffer solutions. This study explores the mentoring of novice Natural Science teachers in a selected school in the Gauteng Province. The background to the study and the statement of the problem are shared. Furthermore, the objectives of the study as well as the significance of the study are covered to justify the research.

1.2 BACKGROUND TO THE STUDY

In South Africa, Crickmer (2007), Robinson (2015) amongst other researchers have noted that beginner teachers tend to face numerous problems in the initial years of their jobs as a result of the lack of mentoring facilities. This is a global problem, which has been found to lead to the phenomenon of novice teacher attrition. In South Africa, the rate stands at 55% of novice teacher attrition while in the United States is at 50% respectively (Pauze, 2005). Novice teacher attrition is a global problem as it impacts negatively on each country's educational development strategies. Moreover, teachers become insecure regarding the new Science content knowledge and its pedagogy, among others. (Lee & Luft, 2008). Albion and Malheiro (2014), however, are of the view that not much attention has been given by policymakers to develop programmes in a bid to ease the instruction of science at primary levels by new Science teachers.

Globally countries that have seen the need to implement formal beginning teacher support programmes include the United States, England, Singapore, Japan and Australia (Phelps, 2003). This shows that the concept has been seen to be contributing immensely to educational development within society. Accordingly, Wang and Renée (2010) assert that there are massive benefits of novice supportive programmes in the first years of teaching. These include:

- improved classroom skills management;
- adoption of progressively complex instructional methodologies;
- more learning open doors for the students; and
- Higher student commitment rates and more prominent instructor self-assurance.

Education is of vital importance within the South African perspective. Under the South African Schools Act of 1996, instruction and learning are required for every South African from the age of seven to the age 15. Inside this respect, the South Africa's National Qualifications Framework (NQF) recognises three groups of instruction and learning, General Education and preparing, Further training and preparing and advanced education and preparing (NQF, 2017). In 2016 for example, former President Zuma in understanding that education is a tool for empowerment, established the education trust for easy access to education for the disadvantaged children (SA News, 2016). There have been policies and methods implemented to ensure the progressive realisation of this right to education. The Integrated Strategic Planning Framework for Teacher Education and Development for the period 2011-2025 thus serves as a blueprint for teacher development. This research highlights that despite the benefits of the novice teacher mentoring programmes, the South African government has not as yet incorporated such novice teacher supporting programmes in its education reforming strategies.

According to Luft, Bang and Roehrig (2007), induction and mentoring for Science has been found to increase novice teachers' implementation of inquiry-based and content-based practices helping to develop the student-centered beliefs about teaching and learning. Wong (2013) further prescribes that “novice science teachers are developed in three tiers or stages along the professional developmental continuum.” The first stage is about practising in classroom management skills. The second stage is about mastering instructional or pedagogical skills. Whilst the third and last skills have to do with enhancing student learning (Wong, 2013) and improving relations within the teaching environment with other stakeholders such as parents and other teaching colleagues.

In addition, Crickmer (2007) identifies that the constraints working against the success of teaching activities, policies, plans and programmes have the potential to produce positive outcomes not just for the teacher but the broader society. Van der Nest (2012) supports this idea by stating that mentoring is one strategy for removing the fears, uncertainties and other problems, which new teachers tend to face in their profession. To Van der Nest (2012), "mentoring is built on complimentary relationship...built on both the mentor and mentee's needs". Southerland, Peters and Leeroy (2011), argue that mentors supply the mentees' needs by holding the hands of the mentee on classroom management, and acculturation. Furthermore, they work with both parents and students, as well as the provision of adequate pedagogical content knowledge. Akerson and Flaningan (2000) note that mentoring and induction are formidable tools for disposing major obstacles which new teachers tend to face in their first year of working in the classroom.

The problem which this study seeks to investigate is the absence of beginner teacher support programmes collectively known as Induction and Mentoring; the existing programmes are either informal or not available at all in South African schools (Robinson, 2015). In this study the focus thus will be on exploring the mentoring programmes in place for novice natural Science teachers and explore how confident teachers are as newcomers in the field.

1.3 STATEMENT OF THE PROBLEM

The problem statement of the study is that there is lack of mentoring on novice science teachers within the Gauteng Province. Studies conducted within this context have shown that the academic performance of students is poor if the teacher is inexperienced. The problem arises when South Africa still does not have induction and mentoring programmes in place to help the novice teachers. Most industries allow newly recruited employees to receive orientation and induction from their senior staff. However, schools in South Africa, especially in the Gauteng Province do not provide induction to their newly appointed teachers, moreover the head of the department (HOD) is expected to engage in teaching and learning that is also done by the new

appointed teacher, in that sense novice teachers are left to fend for themselves without any meaningful socialisation and acculturation. In addition, Dale-Jones (2014:7) confirms the foregoing South African novice teacher dilemma, by postulating that "not many schools have formalized mentoring programs and the trend is more towards an unplanned version of this." Bridge (2016) further concedes that the government's Integrated Strategic Planning Framework for Teacher Education and Development in South Africa 2011-2025 foregrounds mentoring in all stages of teacher education, but full-scale implementation is not yet in place. Mentoring of novice teachers is important for it guarantees the development of teachers so that they become relevant in their discourse. Furthermore, mentoring of novice teachers builds on their confidence and enhance on their ability to become productive. Furthermore, mentoring of novice teachers has an influence towards reducing novice teacher attrition, increase novice teacher retention all leading to stimulate learner performance in science.

1.4 RESEARCH QUESTIONS

The primary research question of this study is to answer the following questions:

- What are the effects and impact of mentoring novice natural science teachers in the Gauteng Province?

The study also seeks apart from the main research question to answer the following questions:

- What is the nature of the current mentoring programmes in schools for the natural science teachers in the Gauteng Province?
- What is the importance of mentoring novice natural science teachers in the Gauteng Province?
- What interventions can be made for mentoring novice natural science teachers to improve learning capabilities for students in the Gauteng Province?

1.5 PURPOSE OF THE STUDY

The purpose of this study is to understand the effects and impact of mentoring novice natural science teachers within the Gauteng Province.

1.6 RESEARCH OBJECTIVES

The main objective of this study is to:

- Understand the effects and impact of mentoring novice natural science teachers in the Gauteng Province.

This research seeks amongst the primary objective to:

- Evaluate the nature of the current mentoring programmes in place for the natural science teachers in the Gauteng Province;
- Determine the importance and relevance of mentoring novice natural science teachers in the Gauteng Province; and
- Recommend the interventions that can be proffered to improve mentoring novice natural Science teachers for improved teaching conditions in the Gauteng Province.

1.7 RATIONALE FOR THE STUDY

The reason for focusing on the need for this study is that the challenges that face the novice Science teachers can be so formidable and discourage them from staying in the profession; hence there is a high rate of teacher attrition (Ingersoll, 2012). Seeing new teachers resigning from the teaching profession can have major effects on potential newcomers to the field. In this regard, Odell and Ferraro (1992) argue that the novice teachers need to be motivated to stay and pursue their careers in the profession. One effective strategy then is for the authorities to clearly identify the challenges, which the new teachers tend to face and to find techniques of getting rid of those constraints or challenges.

Therefore, the motivation or rationale underpinning this study is to bring to public attention the many advantages that can flow from gathering ground-based information on the challenges which novice natural Science teachers tend to face in their individual schools, which impact on a high failure rate in Science subjects in South Africa. By asking the novice teachers and the related stakeholders (mentors) to disclose their particular challenges, the actual factors, reasons and constraints can emerge upon which realistic solutions can then be found. The rationale is based on the idea that realistic and sustainable mentoring strategies for the novice Science teachers need to be based on information from the teachers themselves. As argued by Draper (2010), the experiences and concerns of the novice teachers differ from school to school and only intimate interactions with them have the potential to disclose their particular concerns and recommendations. In the same vein, this study will thus be an exercise in fact-finding research.

1.8 SIGNIFICANCE OF THE STUDY

Within any society, education is of fundamental importance for a plethora of reasons ranging from human rights to development. This study thus is of importance, since firstly, it provides details on the promotion of quality education in South Africa from the role of the teacher. This study is of outmost importance for it improves on the self-confidence, articulation and handling of students which is important within the development of education in the country. Mentoring of teachers therefore is important for it has a direct impact on the development of education in South Africa.

This research is of importance for it can contribute to the establishment of programmes and policies that will focus in ensuring that the mentoring of novice natural science teachers is in effect starting from primary school until further education and training. These initiatives will ensure that the gap between natural science education and other subjects is limited as statistics show that natural science education is lacking due to lack of, content knowledge, equipment on these teachers, and this will impact positively.

Furthermore, the findings from this research will have far-reaching effects on attaining the national goal of providing equitable education to children across South Africa by

concentrating on developing and retaining high-quality natural science teachers. The findings of this research project will be communicated to the various stakeholders including the policy-makers in order to create the awareness on the critical need for understanding the effect of the mentoring programmes and on teacher perspectives.

1.9 SCOPE OF THE STUDY

The scope of the study essentially embraces all aspects that will be covered in the research project. It characterises unmistakably the degree of substance that will be secured by the methods for the research to arrive at increasingly obvious end results that offer decisive and informative responses to the research (Creswell, 2014). This investigation centers on the natural Science teacher within the Gauteng Province.

1.10 DEFINITION OF KEY CONCEPTS

Definitions of key concepts are provided next:

Induction

Induction means to present or situate, help, support and to direct a recently named individual in a new position, to facilitate his change in accordance with his new job (Draper, 2010). With regards to this examination, induction alludes to a programme of supporting, exhorting and observing recently qualified teachers, who accepted posts in schools, to enable them to build expert information and aptitudes required for directing their new jobs (Nantanga, 2014).

Mentor

To Nantaga (2014:23), a mentor “is a full-time, trusted counsel and supporter of a novice teacher. He/she is trained to help novice teachers develop their full potential.”

Mentoring

Mentoring is a procedure of helping beginner teachers to become through the guidance of an experienced teacher (Nantanga, 2014). As per Jones (2016) a collective connection among tutor and novice instructor guarantees the accomplishment of the coaching procedure. Mentoring is a part of Induction (Nantanga, 2014).

Beginning teacher

A beginning teacher refers to a teacher who started a new job of teaching, a teacher who took up a promotion post, or a teacher who transferred from another school or region to a new school (Nantanga, 2014).

Novice teacher

This refers to a teacher who started a new job of teaching after graduating from a training institution. This word is used interchangeably with beginner teacher in this research (Nantanga, 2014).

Experienced teacher/veteran teacher

According to Jones (2016), this term refers to veteran teachers who have been in the profession for more than ten years. To Nantanga (2014), veteran teachers gained extensive knowledge and skills in various pedagogical and professional aspects related to teaching and learning by virtue of being in the profession for an extended period.

Professional standards for teachers

These are milestones or end-points of learning which are linked to the required teacher performance. Teachers are expected to meet these milestones to be regarded as qualified and licensed.

Continuing Professional Development (CPD)

As indicated by Nantanga (2014), a continuing programme is planned for helping teachers to ace profitable aptitudes important to their work-related and self-

improvement needs. Proceeding with expert advancement can happen through formal and casual stages like friend care groups, workshops, dialogues, and coaching and staff improvement programe.

1.11 CHAPTER OUTLINE

Chapter 1

This chapter covers the title and background of the study. It furthermore, discusses the overall direction of the study and its rationale as well as its benefits to the relevant stakeholders in the study. Research questions and objectives are also highlighted to cast light on the research problem.

Chapter 2

This entails a review to be undertaken in terms of the study questions and objectives. The variables within the study are also discussed and a scholarly gap given.

Chapter 3

Methodology is essential within any research. The qualitative research design and its instrument are tabulated in preparation for data gathering.

Chapter 4

This chapter presents and discusses the research findings in relation to the topic under study.

Chapter 5

This chapter presents the conclusions gathered from the literature review as well as those gathered from the research itself. The chapter offers recommendations to the research problem and also covers the implications for future study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The literature review is an essential component of any research subject. In line with the objectives of the research project, the aim of the literature review is to discuss the relevant literature, the gap on the mentoring discourse and to reflect on how the programmes are experienced by novice teachers. In this regard, an understanding of the novice teacher, induction and mentoring, and policies within South Africa that promote mentoring and induction of novice teachers will be discussed. The discussions will also cover challenges facing novice teachers in the performance of their tasks.

2.2 A NOVICE TEACHER

The term novice has predominantly been used in studies on beginning or new teachers, and as Farrell (2012) noted, there is no clear-cut definition of a novice teacher in the literature. In this regard, a novice could be anyone who is teaching something new for the first time or who has entered a new cultural context for the first time (Farrel, 2012). Moreover, there is additionally no agreement by researchers on how long instruction must be to inform the teachers adequately whilst in their novice stage. According to some researchers, a novice teacher is even characterised as a teacher with under five years of teaching experience (Kim & Roth, 2011). Haynes (2011) alludes to it as a teacher with two years of teaching experience. A novice teacher is characterised as an instructor who has less than five years of teaching experience.

According to Long (2016:12), a novice teacher "is an instructor training system graduate entering teaching as a profession." A novice teacher accordingly alludes to an instructor who began a new position of instructing in the wake of moving on from a preparation establishment. This word is utilised reciprocally with apprentice instructor or another educator. A beginning teacher alludes to an educator who began a new position of instructing, an educator who took up an advancement post, or an instructor who moved

from one school or district to another (Nantanga, 2014). To Smith (2017), novice teachers are those teachers in their first year of education with next to zero teaching experience.

2.2.1 Characteristics of a novice teacher

There are a number of characteristics that a novice teacher should possess. A discussion on the characteristics of a novice teacher follows next.

Commitment to life-long skills of learning

A novel teacher is a teacher education programme graduate entering teaching (Long, 2016). Ideally, teaching and education are a progressive gradual process structured by the continual search for knowledge and understanding. Reynolds (2015) therefore, stipulates that the major characteristic of novice teachers endeavour to model life-long learning attitudes and processes and furthermore, are able to construct an environment that enhances these attitudes and processes.

Effective communicator

Other important characteristics for a novice teacher are that they should be effective communicators. Blackwell (2015) stipulates that effective communicators in the realms of teaching are those who express and receive messages through appropriate spoken, written, and non-verbal forms. The reason why communication is an important aspect is because a teacher works with students, colleagues, parents and the community and must be able to connect with the various stakeholders.

Morality

Within the teaching profession, a novice teacher should possess morality as a fundamental attribute. Reynolds (2015) stipulates that within the teaching profession, morality and ethical practices should be enhanced. Ethics and morality therefore can be understood as those values and principles of an individual that

affect more than one person or one's own character, thereby affecting others. Since teaching affects the welfare of others, there is a high regard for ethical principles and practices on the part of the novice teacher.

Facilitator of the learning process

A novice teacher should also be a facilitator of the learning process. Defined, a facilitator is someone who can conduct a learning process for the benefit of those that are being taught (Blackwell, 2015). This is because learning is an active process which entails building meanings and knowledge, therefore they are needed to ensure that the novice teachers own the required, facilitative abilities as part of their professional demeanour. With the South African perspective for example, classrooms have students with different learning styles, cultural backgrounds and capabilities and to be able to cater for such a scenario, the novice teacher must recognise learners' needs, assess their own ability to meet them, and coordinate necessary resources.

In-depth knowledge of pedagogy

Ideally, the novice teacher should have in-depth knowledge of pedagogy. There are various attributes that relate to an in-depth pedagogy. According to Reynolds (2015), these include:

- An comprehension of human improvement and learning theories and their applications;
- A collection of skills that consider powerful administration, of the learning procedure;
- A working knowledge of information of instructional models and teaching techniques; and
- A consciousness of different instructive ways of thinking.

The motivation behind why a novice teacher ought to have an inner and outer instructional method is that the novice teacher must attract information from relevant zones to create powerful learning encounters (Reynolds, 2015).

In-depth knowledge of the content

Another characteristic of novice teachers is that they ought to have an inside and out learning of the substance. According to Haynes (2011), an in-depth learning of substances alludes to the scope of existing and applicable data with respect to the subject or order, structure of that information and procedures used to grow new learning concerning the control. A novice teacher ought to, in this way, get information of the substance for they should draw, from learning of substances to choose and arrange what is to be instructed, decipher new information in the, discipline, and choose what extra content information is required (Reynolds, 2015).

Integration of knowledge and pedagogy

Another important characteristic that the novice teacher should possess is the integration of knowledge and pedagogy. The blending of these two aspects enables teachers how to go about teaching within a particular context. The rationale for this as stipulated by Haynes (2011) is that because both substance and instructive learning are essential requirements of good education, it is adequate. The dynamic collaboration among the substance and instructional method empowers the teacher to provide the best opportunities for student learning.

Reflective practitioner

A novice teacher should also be a reflective practitioner. As stipulated by Reynolds (2015), a reflective practitioner is one who endeavours to identify occasions in the instructive condition and who basically looks at decisions to educate practice. The significance of intelligent apportioning is that it advances powerful education,

improves the nature of learning and encourages the advancement of instructor as an analyst and student.

Liberal education

Liberal education is one of the disciplines that prepares a novice teacher to acquire related and relevant information from a wide variety of disciplines. A novice teacher therefore should be liberally educated so that the teacher has an appreciation of a wide base of education and that the teacher is open to new and informing ideas (Reynolds, 2015). Liberal education gives an establishment to long lasting learning, compelling correspondence, and intelligent practice; it helps the teacher in explaining past connections just as inside a substance specialisation, and it empowers the educator to enable studies and to build the frames of mind and fundamental aptitude in a quickly evolving world.

2.2.2 Differences between an expert and a novice teacher

According to Alexander (2010), there is a huge difference between a novice teacher and an expert teacher. This can be attributed due to their thinking, experiences, and handling of situations amongst other things. The following paragraphs explore the differences between an expert teacher and a novice teacher.

A novice teacher is relatively inflexible whereas an expert teacher is flexible. According to Alexander (2010), an expert teacher deals with problems by involving predictable rules, and routines achieved over a long career in teaching. Furthermore, an expert teacher does not restrict the teaching of students and is liberal in their teaching methods. This is because an expert teacher would have understood the complexity of the teaching environment (Scandura & Shriesheim, 1994). However, novice teachers are not flexible, for they follow certain established rules they have learnt from their tertiary training and this however, does not work within the practical classroom setting. As stipulated by Reynolds (2015), there is need for teaching institutions to ensure that novice teachers are taught on how to handle complex situations as they may rise not to

have manual knowledge. Therefore, the major difference between an expert teacher and a novice teacher is that the former is flexible whereas the latter is rigid.

Another difference between the novice teacher and the expert teacher is that the novice teacher has limited skills whereas the expert teacher is rich in skill and experience. Euade (2015) is of the view that expertise and skills development involve a number of things. Amongst these are trust in intuition, informed by evidence from theory and experience of specific situations, as the basis of discernment and judgment rather than unthinking compliance. Within this regard, an expert teacher works on several fronts at any one time, with multiple goals which will vary for different individuals and groups. This however, cannot be said on the part of the novice teacher for they lack judgment and experience to cultivate themselves from situations, thus they desire the help from the mentors to help them navigate certain challenges.

Another difference between an expert teacher and the novice teacher is that through their development, the novice teacher follows rules and guidelines whereas the expert teacher has deep reserves of tacit knowledge. Alexander (2010) argues that expert teachers do not just comply with established rules and regulations, but exercise a strong degree of autonomy based on their informed judgment. In other words, expert teachers bend rules and regulations in the interest of the learners. However, this cannot be said on the part of the novice teachers who in their operations, follow a strict rule of conduct and do not deviate from this model. Therefore, the development of a novice teacher and the expert teacher serves as an important tool for determining and understanding their differences.

Another difference between a novice teacher and an expert teacher is the use of illustrations and analogies within the teaching environment. According to Firman (2016), novice teachers utilise limited and poor illustrations and analogies after sharing the explicit knowledge. Moreover, classes are more passive and deductive. However, expert teachers utilise demonstrations, lab activities, pictorial and verbal analogies and illustrations more intensively to make content knowledge understandable for the students (Firman, 2016).

Table 2.1 Difference between the novice teacher and expert teacher

Novice Teacher	Expert teacher
<ul style="list-style-type: none">• Relatively inflexible• Limited skill• Rules and guidelines• Poor use of illustrations	<ul style="list-style-type: none">• Flexible• Skilful• Deep reserves of tacit knowledge• Efficient use of illustrations

2.3 CONCEPTUALISING MENTORING

Worldwide, countries have been implementing mentoring programmes as a response to remedy issues faced by new teachers. As mentoring also has been undergoing several changes, some developing countries are already at the forefront of implementation and are already experiencing benefits whilst developing countries like South Africa are still lagging behind and are still being challenged by, amongst other things, high attrition for newly recruited teachers, and high student failure rates.

This section thus explores the ideas articulated on imentoring entailing the new teacher challenges as well as the impact and benefits of Induction and Mentoring in structured programmes as compared to informal programmes. Worldwide research highlights that there are high novice teacher attrition rates reported at 50% during first five years (Ingersoll, 2000). Novice teachers are reported to be faced with untold problems as a result of waned confidence in teaching even though they have pre-service qualifications, weaknesses in classroom management, lack of acculturation from unsupportive school environments partly due to lack of proper mentoring policies from each government around the world, including South Africa.

Mentoring is very complex and varies from one situation to another (Mckim et al., 2007). This leads to researchers and theorists having varying interpretations and conceptualisation of mentoring. Mentoring is interpreted in different ways by different people and it is important that its purpose and intentions in a particular context are explicit. For instance, Megginson and Clutterbuck, (1995) define mentoring as the off-line help by one person to another in making significant transitions in knowledge, work or thinking. Off-line help is the assistance given by another person to a less

knowledgeable one. In this study it is a mentor who provides off-line help to a mentee. Whilst Sweeney, (2008) defines mentoring as the complex developmental process that mentors use to support and guide their protégé through the necessary transactions that are part of learning how to be effective educators and career-long learners. In Sweeney's (2008), assertion, there are implications of a relationship between the experienced and the non-experienced. This is also confirmed by Kram (1985), who notes that mentoring is an intense relationship; a senior or more experienced person, the mentor, provides functions to assist a junior person, known as the mentee. Mentoring is used by private and public organisations and results in the empowerment of the staff.

Eby (1997) explains that mentoring as an exceptional formative relationship whereby guidance, directing, and formative open doors are given to a mentee by a coach, which, in turn shapes the mentee's vocation encounters. The guidance, advising and formative open doors are given to those new in the calling, for example, novice teachers. Normally this developmental relationship is provided by a more experienced professional. Mentoring has several functions; one function is advice or modeling about career development behaviors (Bozemant & Feeney, 2007). As mentoring is normally offered to an inexperienced professional, career development becomes the main focus. As career development does not operate independently from other faculties, other functions must be taken into consideration such as personal support, especially psychosocial support (Bozemant & Feeney, 2007). Psychosocial support mentally prepares the novice teacher for the teaching environment. This study focused on the perceptions of novice teachers on the mentoring received.

Ragins (1997b), explains a mentor as an individual with advanced experience and knowledge who is committed to providing upward mobility and support to mentees' careers. This means that mentors are knowledgeable people whose aim is to develop novice teachers in their careers. After mentoring, the mentees are developed and they are more likely to be promoted than those who did not get the mentoring experience (Ragins, 1997b). That means novice teachers who experienced mentoring perform better than those who were not mentored. During mentoring, the mentor and the

mentee share values, knowledge and experience. The title and status given to a person who assumes the primary responsibility for mentoring is called a mentor (Sweeney, 2008). Individuals who are developed, supported and guided are called mentees or protégés. The mentors help the mentees to cope with the knowledge or work in the teaching profession.

Accordingly, Scandura and Shriesheim (1994) argue that as a transformational activity, mentoring activity involves a mutual commitment by the mentor and the mentee. This means that the mentor should be willing and committed to support whilst the mentors are also as eager to learn and develop their professional and personal skills. Sometimes this relationship can also be characterised by power issues, as a more knowledgeable mentor gives professional assistance to a novice teacher (Eby, 1997). Mullen and Lick (1999) point out that in spite of the fact that mentoring relationships for the most part depend on levels of more recognisable specialist or master information, there is need to take a multidimensional view that defines mentorship as an adaptable, intelligent procedure. Ragins (1997b) also examines power relations in mentoring and also included issues of diversity between the mentor and the mentee. Diversity refers to the differences between the mentor and the mentee. A mentor is usually more knowledgeable and experienced than the mentee. The mentor is also more powerful than the mentee in terms of power relations. To counter the power issues Kram (1985) notes that mentoring can even take place between the peers. This means that the mentoring activity can also be done by a novice teacher, supporting another novice teacher. As this study is focused on the mentoring of novice teachers, the next section unpacks the purpose of mentoring teachers.

The impact of a lack of structured mentoring strategy is quite devastating to novice teachers resulting in many leaving the teaching profession. The motivation to embark on this research was triggered after immersing in extensive extant literature on the plight of the beginner teacher in countries around the world as well as trauma faced by novice teachers in South Africa. Therefore, this research aims to conscientise the policymakers, on the actual factors on the ground affecting the condition of the induction

and mentoring programmes in the schools in Ekurhuleni district, which have been selected for this project.

2.4 CONCEPTUALISING INDUCTION

Induction is about orientation and introduction that is done to new employees that have just joined the company to prepare them for their new role, which helps them to integrate with other employees and the organization culture as a whole. According to TPI-theory (Adam, 2010) designates that induction should include developmental of theoretical and practical skills integration. In the education sector, induction is done by introducing new teachers to policies, school and the subjects that they will teach. The primary outcome for it is to improve the quality of teachers and teaching (DBE, 2009). It indicates that teachers are influenced more strongly by their first school posting than their pre-service training, their first year of employment seem to be more imperative to be able to keep them to the profession, therefore it is of outmost importance for schools to have systems in place in order to conceptualise induction according to the culture of the school. All stakeholders have the potential to impact positively upon novice teachers, the HOD has to orientate subject and its policies on the other hand the principal, the teacher development office and the SGB will mediate other policies and circulars that will impact on their performance.

2.5 INDUCTION AND MENTORING

Within any profession, for effective results, there is need for induction and mentoring (Draper, 2010). Therefore, this lack of on-site job training leads to organisational ineffectiveness, which in turn has a diverse negative impact towards the achievement of organisational goals. In relation to this study, the impact of a lack of structured induction and mentoring are quite devastating to novice teachers resulting in many leaving the teaching profession (Maxwell, Harrington & Smith, 2010). As argued by MacCarra (2003), there is only one method of providing systemic support to novice teachers in their new profession, and this is through a programme-based development method in mentoring and induction. What is induction and mentoring? What does it entail in the teaching profession?

Hobson and Malderez (2013:35) assert that “Induction is a program-level support that spans all of the roles and responsibilities teachers fulfill and can be used to improve their effectiveness in serving students.” This is a development initiative in other words. MacCarra (2003) in conformity argues that this method of induction helps teachers with little or no experience into the profession and their skills are developed through consistent and persistent direction from experienced and seasoned staff and through guided reflection. Induction ranges from content, instructional practice and programme policies (Hobson & Malderez, 2013).

Amongst the strategies used for teacher induction and relevant to this study is mentoring. Marable and Raimondi (2007) postulate that mentoring entails the “pairing of experienced teachers with teachers beginning their careers.” In this regard, the experienced teacher (mentor) is assigned to work closely with the new teacher to provide them with the much-needed guidance and support (Marable & Raimondi, 2007). To MacCarra (2007), induction using mentoring thus helps new teachers learn and adapt to the teaching profession, become better instructors and serve their students more effectively. Mentoring thus is the key in preparing new teachers for the demands of the teaching profession, which cannot be quantified from the teacher’s college but identifiable on the job (Maxwell *et al.*, 2010). Furthermore, mentoring allows the new teachers to deepen their understanding of teaching theories and approaches and classroom management (MacCarra, 2007).

2.5.1 Characteristics of effective mentors

Of paramount importance and for the mentoring method to work, a mentor should exhibit some characteristics. Humphrey and Matsko (2010) postulate that ideally, effective mentors need more than to be good teachers. They must be articulate in the art of teaching, convey how positive results can be achieved and how the new teacher can adapt to achieve this (Humphrey & Matsko, 2010). To be an effective mentor, one must exhibit strong interpersonal skills, have the ability to build a strong trusting rapport and the capacity to handle challenges as they come (Moir, 2013). Communication is

also a tenet of good mentorship in the teaching profession and mentors should be responsive to a wide array of communication skills, including listening (Moir, 2013).

Ideally, no absolute number of years of classroom instruction or relevant experience equates to being a successful mentor. According to Maxwell *et al.*, (2010) however, to provide standard mentoring in the teaching profession, the mentor should have relevant experience in the classroom, strong content knowledge in the same subject, prior experience with coaching or facilitating groups, and the ability to build honest and reflective relationships. Following is a table summarising the behaviour and characteristics of effective mentors according to Moir (2013).

Table 2.2: Behaviours and characteristics of effective mentors

Mentors are active learners who:	They support new teacher's growth and professional development and attempt to:	They communicate effectively and focus on the following:
<ul style="list-style-type: none"> ● Know they will learn from the new teacher ● Demonstrate that they are reflecting from their practice ● Are open to feedback and willing to adapt ● Establish goals for their partnership with the new teacher ● Continue to build their own content knowledge 	<ul style="list-style-type: none"> ● Can articulate the art of teaching ● Help teachers establish goals for themselves and their partnership ● Know when to show their knowledge and let the new teacher discover on themselves ● Do not feel the need to prove competence by knowing all the answers ● Use learner-centered approaches with new teachers ● Set high expectations for beginning teachers 	<ul style="list-style-type: none"> ● Listen with full attention and are able to read verbal and non-verbal cues ● Are able to articulate clearly what they know and have experienced ● Recognise and honour different communication styles ● Ask open-ended questions to elicit thinking ● Probe for specificity, clarity, elaboration and precision so that teachers learn to reflect on their practices and learn to better articulate their

	and recognise and build on new teacher's strength	thinking and reasoning
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(Source: Moir, 2013)

2.5.2 Effective mentoring

As indicated by Marable and Raimondi (2007), in the mentoring process, mentors can help starting educators build up the accompanying practices and aptitudes by making associations.

Making associations between what is found out in expert advancement exercises and the educator's very own work setting.

In such a manner, the guidance can help starting educators apply in their study halls the ideas and systems they find out about in preparing (Morable & Raimondi, 2007). They focus on analysis.

Analysing and considering practice

As stipulated by Moir (2013:27), "Instructors need to know when and for what reason to utilize a procedure or system, not exactly how." In this specific circumstance, new educators are bound to learn by watching the act of other skilful instructors inside the training. This incorporates the coach who sends them input (Morable & Raimondi, 2007).

Including different instructional methodologies in their training

Watching guides in the home room, just as being seen by tutors empowers the new instructor "to show hypothesis, do exhibits, give understudies chances to rehearse, and incorporate application and reflection exercises" (Moir, 2013:28).

Using student work to advise practice

Humphrey and Matsko (2010) contend that guides help new instructors figure out how to break down information and chip away at assignments, execution in the study hall, and accomplishment on state sanctioned tests. This data subsequently can be utilised to improve the new educator's exercise arranging and guidance. This is accomplished by focusing on implicit knowledge.

Making their implicit knowledge about teaching explicit

By articulating their assumptions and testing them against new knowledge, implicit knowledge becomes explicit. New teachers in the profession are helped by mentors to integrate and process into practice what they learn everyday as they work with students (Morable & Raimondi, 2007).

2.6 CHALLENGES FACED BY NOVICE TEACHERS

2.6.1 Background

Challenges faced by novice teachers are many and varied as the teacher's transition from pre-service to in-service along the field of professional development (Maxwell *et al.*, 2010). Harrington et al., (2010) further assert that the teaching profession in its field of growth is plagued with many difficulties for the teacher; reports suggest that difficulties are encountered especially during its first five years (Veenam, 2004). As argued by Leedy (2014:56), "this is the time that the novice teacher has just qualified from the pre-service classroom and is entering the in-service working world."

Within this period additionally, the novice teacher owns theoretical expertise in teaching, but has fewer practical experiences (Harrington & Smith, 2010). The novice teacher in this context does not have expertise in any meaningful classroom management, student behaviour management, instructional, and pedagogical knowledge and in addition is not familiar with the environment (Veenam, 2004). Ingersoll and Perda (2010) report that worldwide research highlights that there are increased high novice teacher attrition rates

during the first five years of service. Novice teachers are reported to be faced with untold problems as a result of waned confidence in teaching even though they have pre-service qualifications; they experience weaknesses in classroom management and lack of acculturation from unsupportive school environments partly due to lack of proper mentoring policies from each government around the world, including South Africa (Pohl & Kelly, 2016). Central challenges faced by novice teachers include a low teacher morale that is discussed next.

2.6.2 Novice teacher morale

One of the challenges faced by the novice teacher is morale. To Rieg, Paquette and Chen (2007:45), “the morale of the novice teacher is compromised due to a number of factors causing the teacher to rethink about her/his future in the profession.” In facing challenges within the profession, the new teacher begins to weigh the advantages and disadvantages based on the morale. Rieg, Paquette and Chen (2007) indicate that initially, the teacher had high expectations especially after graduating, but with the lack of support and matters also compounded by untrained and unmotivated mentors and unconstructive feedback, the new teacher faces an uphill battle in the teaching career. The teacher by now has only one choice, that is, to leave the teaching profession for their morale is low (Pohl & Keilly, 2016).

Novice teachers are confronted in their performance by several major factors such as classroom management and pedagogical and content knowledge weaknesses as well as relationship issues amongst students, parents, and administrative staff. In addition, teacher evaluation and assessment by mentors cause a further rift along the way for novice teachers enjoying their preferred profession (Romano & Gibson, 2016). The waned teacher morale thus becomes a challenge faced by novice teachers. A crucial aspect to focus on is classroom management.

2.6.3 Classroom management

Even if new teachers have received intensive pre-service training, they still face an uphill task in the management of classrooms and controlling student behaviour (Romano & Gibson, 2016). This weakness in classroom skills shortage also prevails

amongst veteran teachers. As postulated by Romano and Gibson (2016), the implementation of a supportive programme in schools improves the novice teacher's hurdles and it creates a bridge for crossing from pre-service to in-service resulting in enhanced coping strategies, increased relations between, students, parents and veteran teachers easing the way for novice teachers towards becoming veteran teachers.

2.6.4 Novice teacher attrition

Newly recruited teachers around the world including South Africa, face overwhelming challenges as they enter the world of work with ample pre-service theory and insufficient in-service practical experience (Worthy, 2005). In most cases however, these new teachers end up being disillusioned, and their morale and confidence wane resulting from lack of support (Romano & Gibson, 2015). In South Africa, principals and the policymakers do not take novice teacher development seriously as attested by absence of induction and mentoring programmes. The poor teacher quality impacts on the learner outcomes specifically in Science and Mathematics. As the challenges take their toll on the novice teacher, the ultimate is witnessed when the attrition rate starts rising to 55% within five years in South Africa and 50% elsewhere in the world (Ingersoll & Perda, 2010).

2.6.5 Burdened by curricular freedom

According to Worthy (2005,) lack of guidance and resources for lessons and unit planning are also a common challenge faced by novice teachers. In a comparative analysis on worldwide new teachers carried out by Apex International in 2015 Makinde (2005:45) reports that “41% of beginner teachers reported that their schools or districts provided them with few or no instructional resources, such as lesson plans.” Fry (2007) argues that although such curricular freedom may be welcomed by established teachers within the profession, surveys suggest that it appears to be a burden for novice teachers, who have not yet developed a robust repertoire of lesson ideas or knowledge of what will work in their classrooms practically.

2.6.6 Sinking in unsupportive environments

The sink-or-swim nature of most of the novice teachers' experiences frequently surfaces as another significant challenge (Fry, 2007). New teachers often report difficult interactions with colleagues, ranging from "benign neglect of administrators to lack of cooperation or even hostility from established teachers" according to Fry (2007:234). Hover and Yarger (2009) cite one first-year teacher who said an established teacher flatly declined to share their lesson plans. More than anything else, novice teachers often appear to yearn for, yet seldom receive, meaningful feedback on their teaching from experienced colleagues and administrators (Makinde, 2005). Regrettably, teacher mentors, ostensibly assigned to provide this support, were sometimes part of the problem, dispensing little guidance, if not bad advice (Fry, 2007). In the words of one new teacher, as cited by Hover and Yeager (2009: 20), "some of the teachers who are mentors shouldn't be. For they are not nurturing people; they've just been here the longest, and they want the mentor position."

2.6.7 Novice teacher retention

Structured mentoring programmes are praised for novice teacher retention (Roff, 2012; Crickmer, 2007) because, among other things, the government has policies and budgets to run such programmes. Through these programmes trained mentors are recommended to give support to the novice teachers. The trained mentors have the will power to assist the new teachers with pedagogical knowledge and classroom management. In addition they orient the new teachers around the school as well as socialise them with individual school policies until the beginner teacher has found their way, that is, are confident enough to teach alone and are no longer intimidated. This planned, structured support allows novice teachers to overcome challenges discussed in the next section. The retention of novice teachers improves from 54% to 85% (Crickmer, 2007). The costs of the programme pay for themselves due to realised savings from not replacing lost teachers. But, successful novice teacher induction and mentoring is not easily achieved by just any programme, that is, only effective programmes can do this as discussed below.

2.7 EFFECTIVE NOVICE TEACHER MENTORING: THE BROADER CONTEXT

What is even more important is the implementation of an effective support programme (Hobson & Malderez, 2013). An effective induction and mentoring programme takes care of micro/mentor weaknesses, school level failures on the meso and national failures on the macro level. Thus, in terms of conceptualisation, researchers such as Hobson and Malderez (2013) assert that even though Induction, Mentoring and Continued Professional Development (CPD) is treated as top educational development priority in many countries around the world (Marable & Raimondi, 2007), they cannot be addressed in isolation from their broader social environment. According to Hobson and Malderez (2013) success of mentoring and induction programmes need to be conceptualised at three interlinked levels:

- At the micro/mentor) level;
- At the (meso/ school) level; and
- At the (macro/national) policy level.

Regarding failure at micro level, Ingersoll (2004: 28) indicates that “even if induction and mentoring does matter the proper environment is needed to support the teacher.” Hobson and Malderez, (2013) argue that successful mentoring programmes need the support of the school, the community, the local and national government officials as well as the business and civil society organisations. A relational perspective thus underpins the success of the programme under investigation in this study.

From the above information, the following figure provides an outline of the views of stakeholders in coming up with an effective mentoring structure. The broad aim is to find out the nature of the policy and plan currently in place to run a novice teacher induction and mentoring programme for natural science teachers. The model indicates that the study will cover two main areas: the nature of any Department of Education policies and plans on mentoring the Sciences teachers, and secondly, the implementation and monitoring plans to be put in place.

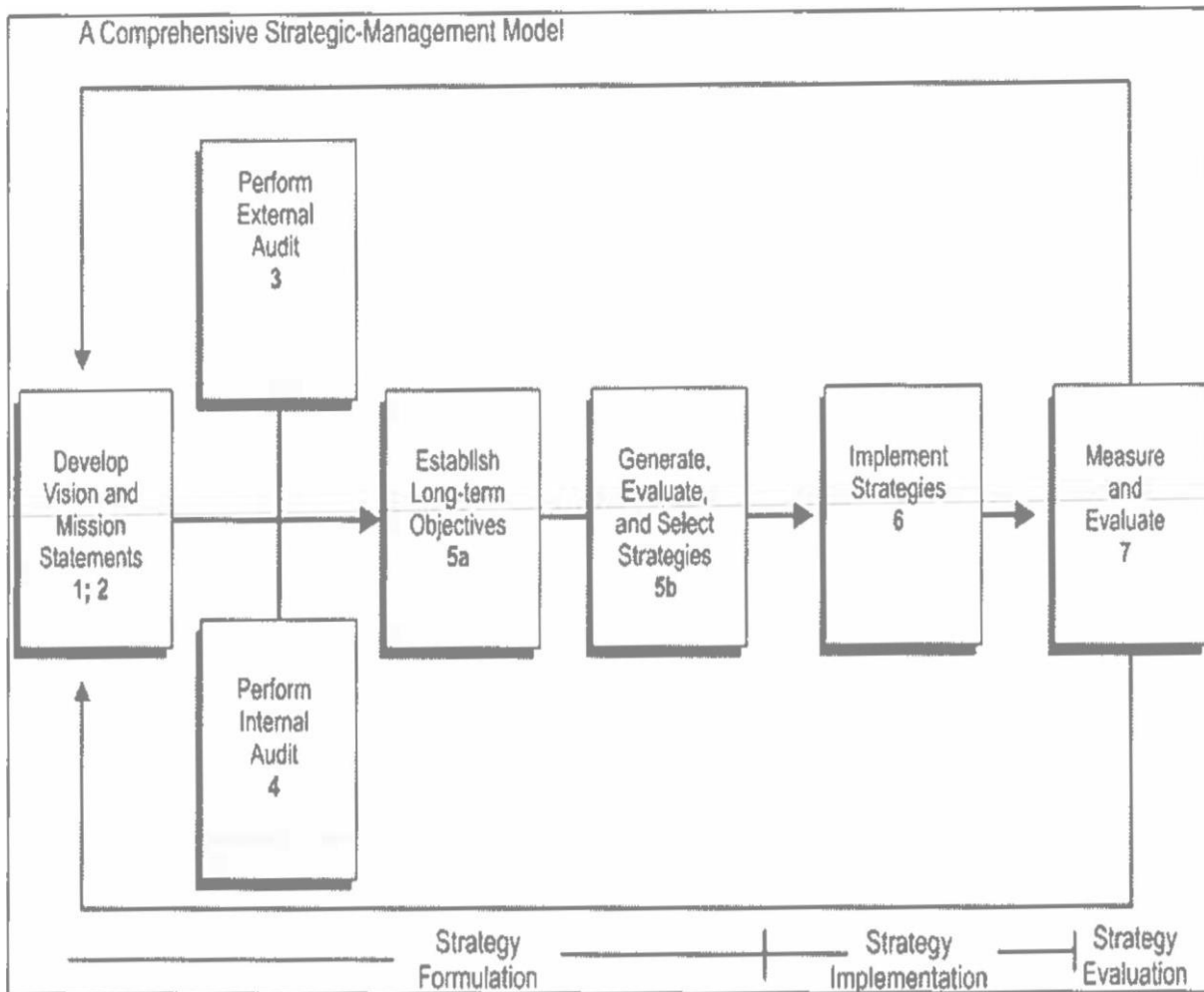


Figure 2.1: The basic structure of policy/plan (Source, David, 2004: 14)

The above model indicates that the information has to be generated from the stakeholders. Fig 2.2 presents another outline of the structure or context of the study to be undertaken based on the above. This outline is based on the theory that stakeholders who are to implement policies and plans are central in determining the final outcomes of social processes. Mouton (2001), emphasises the point that the factors influencing the implementation of public policies, plans and programmes need to be central in social research projects. The factors tend to be associated with the concrete activities of people as they interpret the policies, plans and programmes differently to produce different outcomes.

This study thus will adopt this agency-based approach to the social research process by obtaining the bulk of the information from the relevant stakeholders concerning the factors, which they think explain the implementation of the teacher mentoring programmes in the schools selected for this project. Elsewhere in South African schools, Robinson (2015), highlights the need for giving stakeholders the ample opportunities to enable them to disclose the factors which they think explain the concrete outcomes of mentoring programmes. This study will thus make a contribution to the research projects on the mentoring programmes by engaging the opinions of the relevant stakeholders.

As indicated under steps 6 and 7 in Fig 2.2 above, the policies, plans and strategies for the novice teacher might not be implemented to the full by the relevant stakeholders thereby producing the intended impact or outcomes. The model in Fig 2.2 thus illustrates how the macro policies and plans at the Real level can interact with the micro decision making processes of the teacher at the Actual level to produce unintended outcomes at the Empirical level.

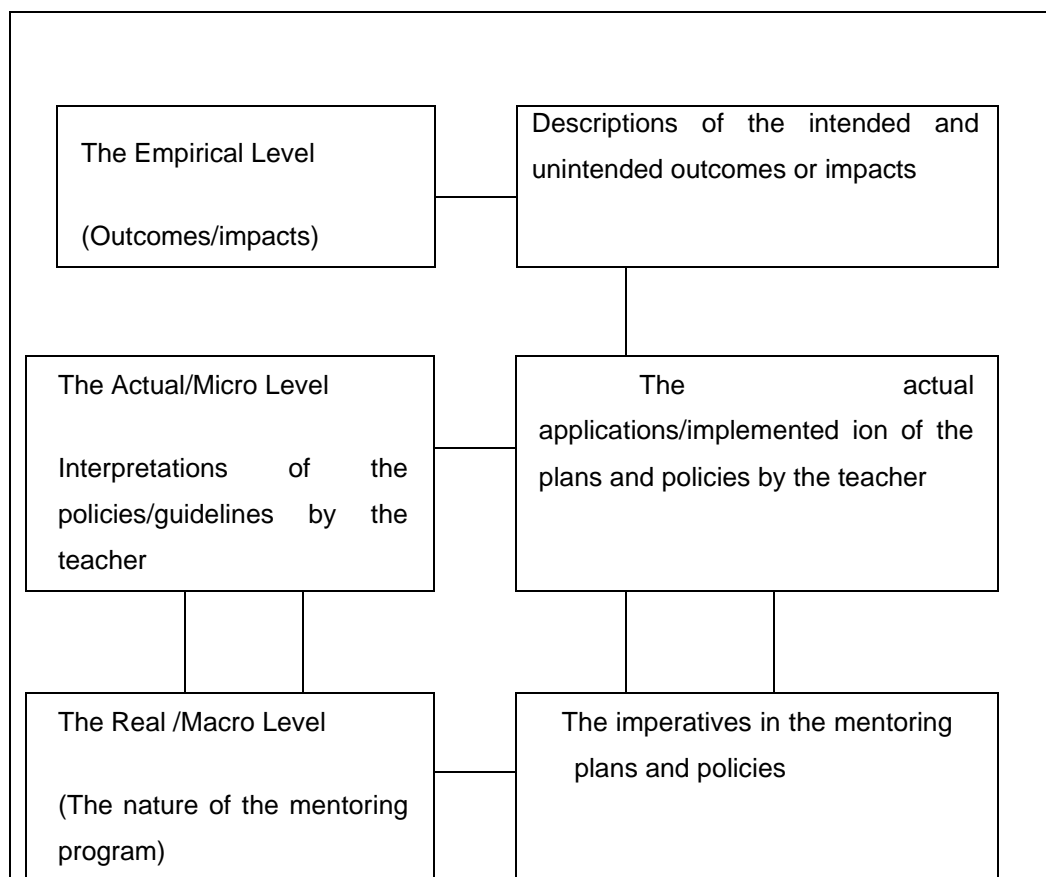


Figure 2.2: The critical realist stratification model (Source: Sayer, 2000)

The above model indicating the mentoring programmes in the teaching profession helps to replace the stakeholders at the center of the process linked to the mentoring programmes. In this way the study will indicate that an understanding of the impact of the mentoring programmes needs to be based on information from stakeholders (in this case, the teachers) who are directly linked to the topic.

2.8 IMPACT OF MENTORING A NOVICE TEACHER

Mentoring affects the novice teacher. Ingersoll and Smith (2004:20) reports that "there was a 29% decrease in wearing down rates where customary associations with experienced instructors were framed which went past essential acceptance." Moreover, the manner and best enlistment projects offer various backings through giving tutors from a similar order, prospects to take part in gathering or joint arranging exercises (Ingersoll & Smith, 2004). In a study conducted by Smart and Arrowsmith (2014), it was

established that there is a significant correlation between induction and retention. This suggests that there is need for induction programmes to focus on more than the standard basics.

Induction has an effect on teacher job satisfaction and efficacy of the teachers. According to Humphrey and Matsko (2010), teachers who received progressively concentrated coaching, whose enlistment had a solid spotlight on guidance, who had an assortment of acceptance supports and who worked in steady school settings announced more noteworthy improvement in their instructional practice.

In the same vein, Harland and Kinder (2007) suggest, changes in subject skills and knowledge, change in the confidence self-esteem, deeper educational understanding, clearer rationale for actions, more considerations, greater ability to lead change and greater contentment all emanate from induction of the novice teacher and impact on service delivery.

Mentoring has also been argued to affect the emotional well-being of new teachers. In a study conducted by Humphrey and Matsko (2010), “several teachers mentioned that they gained self-confidence through group meetings in which they could hear about their colleagues’ experiences, which were not all that successful either.” Events like special meetings for beginning teachers helped novice teachers to get to know their workmates and prevented them from feeling alone. The support of a mentor has since time immemorial made new teachers feel supported (Mouton, 2001). Harland and Kinder (2007), report that in spite of differences between induction programmes, virtually all teachers who had received at least some support from an induction programme confirmed that it had a positive influence on their well-being.

Mouton (2001) emphasises that induction and mentoring programmes that guide and support novice teachers in their first years of their teaching profession have always been crucial in developing sound teaching practice and also retain more teachers in the profession. In conformity, Smart and Arrowsmith (2014) are of the view that “induction and mentoring helps with the development of the knowledge and skills that novices need to be successful in their first year of teaching.” Cherubini (2007) thus argues that it

is unreasonable to expect novice teachers to succeed like veterans from the initial entrance to the school and it is unfair especially if taking into account that it sometimes happens without any assistance. Induction and mentoring thus contribute to novice teachers' effectiveness and pedagogical practice and it should be seen as crucial for novice teachers' professional development.

2.9 THEORETICAL FRAMEWORK

The theoretical framework is crucial to any study, because it lays the theoretical underpinnings that help to understand the research problem. The cognitive social theory and the human capital theory were this utilised within this research.

2.9.1 The Social Cognitive Theory

The objectives of this study have led to the utilisation of the cognitive learning theory for it helps understand the impact of mentoring novice natural science teachers. According to Sincero (2015), the essential idea of learning is the fundamental perspective inside this hypothesis. The psychological learning hypothesis has been utilised "to clarify mental procedures as they are affected by both inborn and extraneous components, which in the long run realize learning in a person" as per Sincero (2015).

In particular, the social cognitive hypothesis holds that bits of a person's information procurement can be legitimately identified with watching others inside the setting of social communications, encounters, and outside impacts (Brown, 2004). In addition, Santrock (2008) asserts that this theory suggests that when individuals watch a model playing out conduct and the result of that conduct, they recollect the succession of occasions and utilise these data to manage their consequent practices. Through perceptions, an individual can likewise be provoked to take part in the conduct that they effectively learned. At the end of the day, a person does not adapt new practices exclusively by attempting them, yet rather, individuals are reliant upon the replication of the activities of others. This is ideal within this research as novice teachers, through mentoring, learn the precise steps of their patrons for effective service delivery.

The theory is argued to be based on three fundamental yet co-relating factors. The three underpinning factors on this theory are inter-related for they lead to an understanding of the theory in detail. For example, experience of an individual is related to the behavior and the environment. These realms are mentioned next:

- **Personal:** It is crucial that mentors should check if the individuals have high or low self-efficacy toward the behavior;
- **Behavioral:** The mentors must check the response individuals receive after they perform behavior; and
- **Environmental:** These pertain to aspects of the environment or setting that influence the individual's ability to successfully complete behaviour.

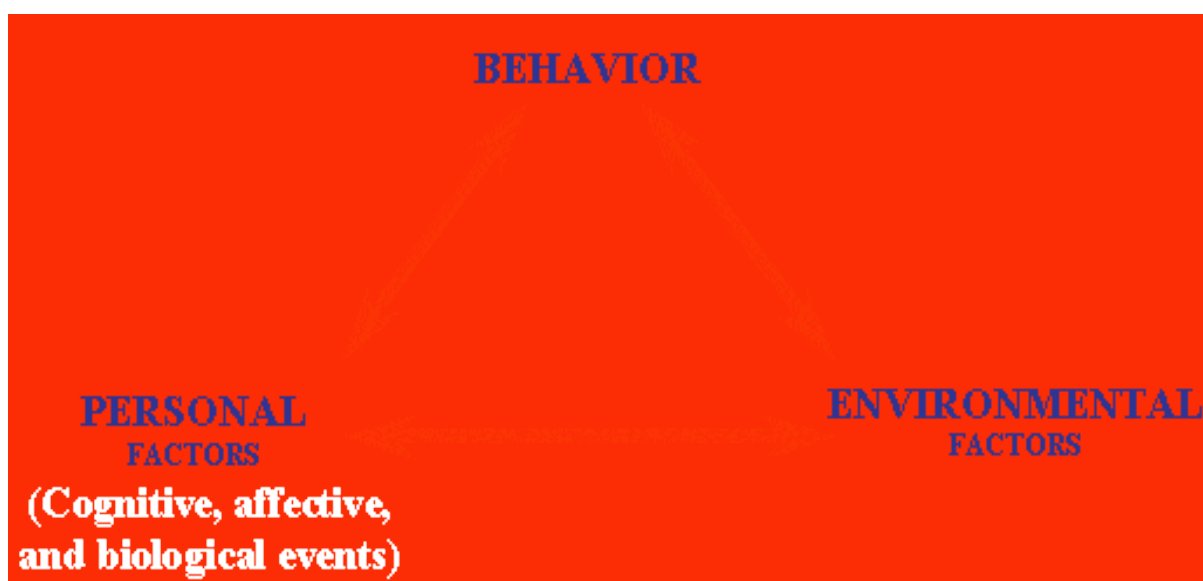


Figure 2.3: The Social Cognitive Theory (Source: Bandura, 1996)

In the person-environment interaction for instance, human beliefs, ideas and cognitive competencies are modified by external factors such as a supportive mentor and an enabling schooling environment. In addition, the person-behaviour interaction, and the cognitive processes have an effect on the behaviour of an individual and likewise, performance of such behaviour can modify the way the individual thinks. Lastly, the environment-behaviour interaction, and external factors can alter the way an individual behaves. As stipulated by Bandura (1996), the cognitive theory clearly implies that “for

effective and positive learning to occur an individual should have positive personal characteristics, exhibit appropriate behaviour and stay in a supportive environment.” These tenets make it useful within this research, since mentors must exhibit positive behaviour.

2.9.2 The Human Capital Theory

Even though the theory is basically used in marketing related fields, this research finds the human capital theory useful for its objectives of employee productivity through learning and it can be identified with mentoring of novice teachers. In general terms, the theory relates to any stock of knowledge or characteristics an employee within an organisation has and how it contributes towards organisational productivity. In line with the research objectives, this theory can be defined to relate to the knowledge both acquired from the teacher’s official training and that acquired from the mentorship programme and how it relates to their output.

The term human capital can trace its roots to the early 1960s; Schultz (1961: 140) defines the theory as comprising of the knowledge, skills and abilities of the people employed in an organisation. Becker (1993: 3) defines human capital as the “knowledge, information, ideas, skills, and health of individuals.” More recently however, Thomas *et al.* (2013: 3), define human capital as the “people, their performance and their potential in the organization.” The inclusion of the term potential thus is important as it indicates that employees can develop their skills and abilities over time and in this case study research, novice teachers can increase their knowledge through mentorship. Dess and Picken (2017) thus provide a comprehensive understanding of human capital as they suggest that the theory consists of the capabilities, experience, skills and knowledge of an individual acquired over time through learning on the job.

The human capital theory delineates mentoring as one of its most fundamental attributes. Mentoring according to Klinge (2015) is a customary procedure where accomplished individuals aid someone else in the improvement of their own thoughts, learning, and expert capability. The job of a guide is to give exhortation and furthermore, help the mentee think about their encounters to encourage their advancement inside a

specific calling. The human capital hypothesis in this manner clarifies that the mentor's very own experience is of specific incentive to the mentee. Besides, tutors are especially sharp at encouraging twofold circle learning as they can urge the mentee to consider current learning and how future learning might be improved (Klinge, 2015). Inside the exploration issue, mentoring is contended to be helpful for it carries a wide assortment of advantages to both the learner instructor and the instructive talk on the loose. Mentoring within the academic discourse requires mentors to serve as role models and supporters for the novice teachers. This thus requires pairing a new teacher with the senior teacher within the school for improved performance. Mentoring within the human capital perspective thus promotes on the-job learning and can act as a complement to formal training (Armstrong, 2014).

2.10 CONCLUSION

This chapter discussed the literature review and theoretical framework relevant to this study. Within this section, an introduction to the concept of a novice teacher was introduced. The challenges that novice teachers face were also tabulated. In addition, mentoring and induction and its effects were discussed. The cognitive theory and human capital theory have also been discussed in reference to the research objectives. The next chapter presents the methodology relevant within this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Within any research, the methodology takes center stage as it offers the methods, techniques and mechanisms to be adopted for data collection. Research methodology encompasses the complete research process, approaches, procedures and data collection or sampling used (McMillan & Schumacher, 2001). This research is premised on qualitative data collection methods. Therefore, this study sought to answer the following questions:

- What is the Natural science teachers' understanding about mentoring?
- What is the nature of the current mentoring programmes in schools for the Science teachers in the Gauteng Province?
- What is the importance of mentoring novice natural science teachers in the Gauteng Province?
- What interventions can be made for mentoring novice natural science teachers to improve learning capabilities for students in the Gauteng Province?

3.2 RESEARCH DESIGN

There are various research designs relevant within the qualitative study. This ranges from descriptive, exploratory, and explanatory to causal case studies. An adoption of a research method, however, depends on the nature of the research problem. Within this research, a case study research design is utilised. Defined, case study research excels at bringing an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research (Creswell, 2014). Flick (2011:56) highlights that “case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationship.” In this study, a case study design assisted the researcher to collect data on how to mentor programmes that can yield positive results to improve teacher confidence and retention, which will reduce teacher attrition.

A case study is also effective in this research for it brings about the objectives, policies and plans on the mentoring processes and the objectives underpinning, the programmes concerned, on the mechanisms in place to implement such plans and on the monitoring mechanisms in place to evaluate the impact of the programmes. The study, therefore, was an attempt put much of the emphasis on the perceptions of the natural Science teachers in regard to the induction and mentoring processes they have experienced as well as what they think are the reasons accounting for the successes and failures of the mentoring programmes.

3.3 RESEARCH PHILOSOPHY

Fundamentally, there are two kinds of research strategies in particular qualitative and quantitative research. Neuman (2014) contends that the mixed-methods approach involves both the quantitative and qualitative approaches and that they are complementary. This investigation because of its utilisation of a contextual analysis embraces the qualitative research procedure. To Patton and Cochran (2002:12), qualitative research is "described by its points, which identify with seeing some part of public activity, and its techniques which (by and large) produce words, as opposed to numbers, as information for investigation." Concerning this exploratory study, a qualitative approach is helpful for it comprehends the alternate points of view, for example, those of novice teachers and clarifies their encounters in their first long periods of obligation. Neuman (2014) in this manner contends that this strategy is inductive and he cautions about the influence of implications attributed to images, customs, and stories. Qualitative research in this way is inside and out research utilising a scope of strategies, which expects to comprehend why individuals think and carry on in the manner that they do.

Qualitative research is frequently used in academic research; it was used in this research for it helps understand the need of mentoring on novice natural Science teachers in the Gauteng Province. The researcher piloted ideas and developed qualitative research and evaluation on how mentoring on novice teachers within the natural Science subject profession can be impacted. Qualitative research is premised

on its generation of original insights, concepts and ideas, thus this method will also help in recommending what needs to be done. According to Creswell (2014), this type of research method, facilitates the interpretation of the cognitive, affective and emotional landscape of society, urban contexts and institutions relevant within this research.

Inside this qualitative approach a phenomenological, exploratory worldview was used. Since qualitative research incorporates subtleties with social impetus, a phenomenological worldview can be used as it prompts a method for taking a look at the topic under investigation from a person's perspective (Creswell, 2014). As indicated by Flick (2011), the objective of subjective phenomenological research is to portray a lived understanding of a topic. This equips the researcher to probe the upside of understanding the member's observations as they surface in a direct approach. This is based on the perception that a phenomenological study endeavours to put aside predispositions and biased presumptions about human encounters, emotions, and reactions to a specific circumstance (Burell & Morgan, 1979).

3.4 POPULATION AND SAMPLING

3.4.1 Population

Population is a group of entities sharing a common set of characteristics, and sample is a group of population with specific elements relevant to the study according to Neuman (2014). Flick (2011) propounds that a population forms the central focus of the phenomenon that is investigated during the course of the research and where accurate information will be drawn from. In other words, a population is a group of individual units with some commonality.

In this regard, even though there are vast primary schools within the Gauteng Province, this research utilised three primary schools in Ekurhuleni North. These primary schools have two novice teachers each, who have been teaching between one and five years and have pre-service qualifications together with three mentors who have been teaching natural Science teachers at the target school.

3.4.2 Sampling

Within any study, there is need to identify the target population for data collection to commence. There are two types of sampling namely probability sampling and non-probability sampling. The non-probability sampling strategy deals with non-numerical data, mostly normative (Neuman, 2014). Within this research, purposive sampling was utilised. According to Creswell (2014) purposeful sampling is the most widely recognised examining system. In accordance with this sampling method, members are selected bearing in mind specific criteria linked with the research questions.

Since the investigation tries to dissect the effect of mentoring of novice natural Science teachers in the Gauteng Province, the sample size is foreordained and dependent on hypothetical immersion. Most extreme variety examining was used, since the examination tries to catch a wide scope of viewpoints identified with the effect of preparing and advancing on hierarchical execution. Neuman (2014) contends that the most extreme variety shows a wide scope of traits, practices, encounters, episodes, characteristics and circumstances which in addition add more prominent bits of knowledge to the topic under research by taking a close look at it from all angles. This enabled the researcher to recognise basic topics that were clearly related to the example. A sample size of 8 respondents therefore was used.

3.5 DATA COLLECTION METHODS

Data collection is the process of collecting data and there are various methods within a study. Premised under the qualitative research methods, interviews and observations were mainly used as primary data gathering methods in as much as secondary data through documentary search were utilised.

3.5.1 PRIMARY DATA COLLECTION METHODS

Interviews

As indicated by Mouton (2001), structured interviews are verbally directed surveys, in which a rundown of foreordained inquiries are posed, with practically no variety and with

no degree for follow-up inquiries to reactions that warrant further elaboration. Creswell (2014) contends that inside these sorts of interviews, there is space for testing in which the specialist will look to comprehend a specific marvel. This examination used structured interviews for they are moderately speedy and simple to regulate and are of specific use for explanation of specific inquiries. Furthermore, structured interviews investigate the perspectives, encounters, convictions and inspirations of individual members in this way commendable in this research.

Interviews involved descriptions and perspectives of the mentoring experiences to be provided by the teachers during their early years of teaching. The interviewee was asked background or personal information questions to eliminate uncertainty. The questions will cover details regarding the experiences, beliefs and feelings regarding the induction and mentoring practices. Another set of questions were designed to gather the experiences of the mentors whilst the last batch of questions covered the experiences of the relevant policymakers regarding the policy on induction and mentoring of South African schools.

Section A: Demographic Details

Section A is based on the demographic aspects of the research participants. Their occupation and years within the teaching profession were emphasised.

Section B: Mentoring and Induction

Section B provides the understanding of mentoring and induction on the part of the novice teacher.

Section C: The impact of mentoring on novice Natural Science teachers

Section C covers the impact of mentoring on novice natural science teachers.

Section D: Recommendations

Section D asks the participants on their recommendations on the research problem.

Document analysis

This research also utilised document analysis as a source of information. It was thus used to obtain information on the publications of the Department of Education and Training which address the policies, plans, guidelines and programmes of the government pertaining to the mentoring projects.

3.6 DATA ANALYSIS AND PRESENTATION

Thematic analysis was used to analyse the crude data. It is a qualitative research method that focuses on finding themes within raw data. This method establishes relationships between data for purposes of data reduction (Flick, 2011). Coding of the statements of the stakeholders supported the identification of themes that represented a classification of the raw statements. This qualitative approach to data analysis incorporated the categorisation of the factors that explain the success and failures in the mentoring programmes — that is, the experiences, meanings and the explanations as experienced by the stakeholders who will be interviewed (Glaser, 1992).

Clusters of codes emerged from the raw data that represent what the stakeholders contributed as the successes and failures facing the novice teachers, their mentors, and the policymakers towards the mentoring processes. The answers to be obtained from the research participants were analysed with the grounded theory coding procedure as indicated below in the four steps: data collection, open coding, axial coding and selective coding.

The bulk of the information analysis processes was devoted to issues on the factors accounting for the successes and failures of the mentoring programmes. Mouton (2001), Makinde (2005), Taiwo (2005), Hill and Hupe (2006), Onkware (2015), and Otiemo (2015), among others, devoted considerable attention to the factors which tend to influence the implementation of public policies and plans. The grounded theory-based questionnaires focused the questions on the problems which the stakeholders think influence the implementation of the mentoring programmes in the selected schools.

3.7 TRUSTWORTHINESS OF THE STUDY

Whereas quantitative studies test the reliability and validity of the research, qualitative studies conduct a process that is known as trustworthiness of the study. This process is conducted in a bid to ensure that the findings gathered within the research are accurate and that if the study is conducted, the same set of results can be achieved. The study therefore ensured trustworthiness of the study through the following:

3.7.1 Credibility

Flick (2016) presents credibility as “a factor that contributes immensely to a belief in the trustworthiness of data through prolonged engagement, persistent observations, and referential adequacy and member checks”. However, Babbie (2010) argues that “triangulation and member checks are primarily and commonly used methods to address credibility”. This study ensured credibility by ensuring that the research participants had reliable information of the research problem.

3.7.2 Transferability

Transferability is the “generalization of the study findings to other situations and contexts” according to Saunders et al., (2012). The context in which qualitative data collection occurs defines the data and contributes to the interpretation of the data. For these reasons, generalization in qualitative research is limited. Transferability was ensured through detailed information of the research problem to ensure that the findings of the study are relevant towards addressing the research problem

3.7.3 Dependability

Babbie (2010) is of the view that “dependability also means consistency of the research findings”. This concept thus refers to the ability of the researcher to account for the constant changing conditions of the phenomenon studied, for the interaction with study participants and for the entire research process carried out with an emergent design. Dependability was ensured through the identification of future areas that studies could be conducted.

3.7.4 Conformability

According to Neuman (2014), conformability refers to “neutrality of the data rather than neutrality of the researcher”. If the research is confirmable, the study should be able to

find conclusions grounded in data. It focuses thus on the end product of the research. Conformability was ensured through thematic analysis in which the study showed that data gathered from the research came from the research participants and not from the researcher.

3.8 RESEARCH ETHICS

Research ethics are concerned with beliefs of what is right or wrong from a moral perspective. It focuses on what is morally proper and improper when engaging with the participants during a research project or when accessing data (Creswell, 2014). The researcher thus obtained approval from all the stakeholders prior to administering questions to the participants. The participants were reassured of the confidentiality. The participants were informed of the purpose and benefits of the study. The units of the study embraced the novice natural Science teachers, their trainers and the government officials.

The researcher wrote letters to all the participants to ask for their consent to participate in the study. The signed letter is included as annexure to serve as evidence that they were consulted and that they had given consent to participate. It is also important to indicate in the letter their rights and the effect of their withdrawal from the study. But most importantly it is done to assure them of the confidentiality of their responses.

The letter was written to the school principal asking for his permission to conduct the study at the school and to indicate the times to avoid time clashes so that interviews did not affect the teaching and learning time negatively. The response letter was filed as an annexure to serve as evidence that the researcher obtained permission to conduct interviews. It was stated in the letter that the information obtained was only used for the purpose of study and nothing else without the approval by the school authorities. The names of the school and participants were not divulged to protect them and the school from any adverse effects. The sample of participants had to be strictly adhered to so that we did not discriminate against any person on the basis of anything including disability and gender.

3.9 CONCLUSION

This chapter discussed the methodology relevant to this research study. This study adopted a qualitative research approach where interviews were used as data collection instruments. Content analysis was used to generate data presentation and analysis. Furthermore, ethics were identified as useful within this research. The next chapter deals with the findings of the study.

CHAPTER 4

RESULTS FINDINGS AND ANALYSIS

4.1 INTRODUCTION

The previous chapter presented the methodology utilised to gather, interpret and analyse information in relation to the research problem. Continuing from Chapter 3, this chapter however, presents the results, findings and analyses on the findings in relation to the research on mentoring novice natural Science teachers within the Gauteng Province. This chapter firstly presents the demographic details of the research participants which are important to make generalisations in relation to the research. Therefore, through thematic analysis, this chapter presents the findings, with emphasis on the implication of these findings in understanding the research problem.

A covering letter accompanied the respondents outlining the rationale of the research, what is expected of the researchers and how the results were going to be utilised. This process was essential for it explained the rationale of conducting the study and it endeavoured to remove doubt in the perception of the respondents on the nature of the research. The interview took approximately 30 minutes and those that consented to the interview, were utilised in this final report through the use of classification such as Respondent one, two and so on.

The interview guide was structured in relation to the following objectives:

The main objective of this study was to:

- Understand the effects and impact of mentoring novice science teachers in the Gauteng Province.

This research seeks amongst the primary objective to:

- Evaluate the nature of the current mentoring programmes in place for the Science teachers in the Gauteng Province;

- Determine the importance and relevance of mentoring novice natural science teachers in the Gauteng Province; and
- Recommend on the interventions that can be proffered to improve mentoring novice natural science teachers for improved teaching conditions in the Gauteng Province.

This chapter is organised in the following framework:

Table 4.1: Proposed framework of objectives of this study

Response rate of the study	
Demographic details	Participant variables: <ul style="list-style-type: none"> ● Age ● Gender ● Highest qualifications ● Current position ● Work experience
Presentation and analysis of findings	The objectives are covered next: <ul style="list-style-type: none"> ● Objective 1 was to understand the effects and impact of mentoring novice science teachers in the Gauteng Province. ● Objective 2 was to evaluate the nature of the current mentoring programs in place for the science teachers in the Gauteng Province. ● Objective 3 was to determine the importance and relevance of mentoring novice natural science teachers in the Gauteng Province. ● Objective 4 was to recommend the interventions that can be proffered to improve mentoring novice natural science teachers for improved teaching conditions in the Gauteng Province.
4.5 Conclusion	

4.2 RESPONSE RATE OF THE STUDY

The study identified 10 participants as part of the study. Following is a table presenting on the response rate gathered within the study

Table 4.2: Response rate of the study

Item	Number	Percentage
Interviews	8	100%
Accepted Interviews	8	100%
Rejected Interviews	0	0%
Response Rate	8	80%

The study sent 10 interview invitations and of these interviews, eight consented to participate and two were rejected. The study therefore gathered the response rate of 80%. As stipulated by Creswell (2014), a qualitative study should seek to achieve a response rate of more than 60% for this is the rate that structure ideal meanings, feelings and perceptions of the target population. In this regard, the response rate of the study is ideal enough to transfer the findings to similar contexts, even though generalisations cannot be done from such a small sample.

4.3 DEMOGRAPHIC DETAILS

Demographic details are essential within any study. This is because they present the composition of the participants to determine if their characteristics and traits meet the target population (Maree, 2010). The study gathered the following demographic details:

- Age,
- Gender,
- Highest Qualification,
- Current Position, and
- Work Experience.

4.3.1 The participants' age

The study sought to determine on the age of the participants. Maree (2010) stipulates that age is essential for it gives a study an objective understanding on the research

problem, for from conventional wisdom, age presents on a better understanding of the research problem.

Table 4.3: Participants' age

Item	Number	Percentage
Below 35 years	2	25%
36-45 years	2	25%
46-55 years	2	25%
Above 56 years	2	25%
Total	8	100%

The study gathered that the age variables as cast within the demographic details and they were equally proportionate with each age group constituting of 25% of the respondents. This therefore, entails that there is a wide variation of age among the respondents making it ideal to understand the research problem from different age perspectives.

4.3.2 The participants' gender

The study also sought to determine on the gender of the respondents and understand on the impact of gender on the research problem. This was premised on the ideal that gender helps understand the different attitudes towards mentoring.

Table 4.4: The participants' gender

Item	Number	Percentage
Male	2	25%
Female	6	75%
Total	8	100%

The above information can be presented in the form of a graph for visual purposes.

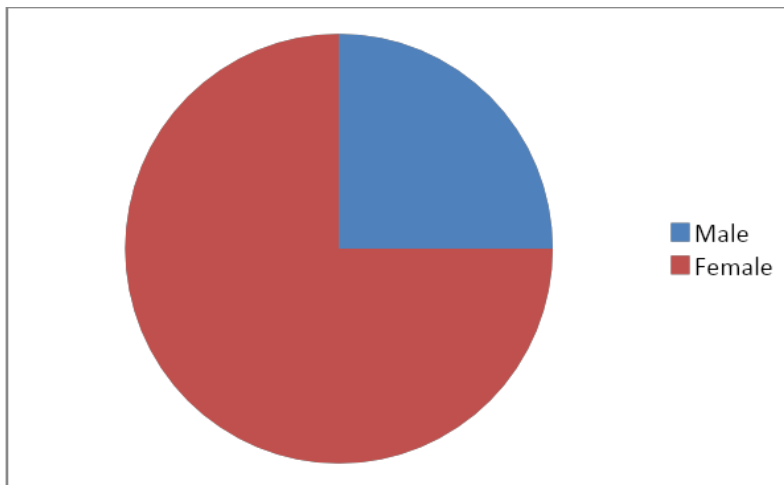


Figure 4.1: Participants' gender

The study gathered that the majority of the participants, constituting 75% were female, whereas males only amounted to 25% of the sample. This shows that the teaching profession within the Province is mostly constituted of females and these are also the ones that have attained leadership positions within the discourse. According to SA News (2017), it was discovered that the teaching profession is female dominated. However, the composition of the participants is ideal enough to structure and understand the research problem.

4.3.3 The highest participant qualifications

The study also sought amongst the demographic details to understand the highest qualification of the respondents. This is because coupled with experience, qualifications are ideal in helping understand the research problem.

Table 4.5: The highest participant qualifications

Item	Number	Percentage
BSC	2	25%
Honours	2	25%
Masters	2	25%
PhD	2	25%
Total	8	100%

The study gathered that there is an equal proportion of the respondents' qualifications, all comprising of 25% in each category. This postulates that the study utilised a sample that was highly capable and ideal to give varying insights into the research problem for they have the required academic qualifications.

4.3.4 Current position of the participants

The study also sought to understand the current work departments of respondents. This is because various departments are premised on different functions and an understanding of an individual's department, a comprehensive understanding of the research problem can be achieved.

Table 4.6: The participants' Work Department

Item	Number	Percentage
Teacher	3	37.5%
HOD	3	37.5%
Snr Education Specialist	2	25%
Total	8	100%

The study gathered that the participants belonged to different departments, thus it was ideal to make inferences in respect to the research problem. The study therefore gathered that 37.5% of the respondents were teachers, the other 37.5% were Heads of Department (HODs) whereas 25% of the participants were Senior Education Specialists. The composition of the sample helps to provide a broad and diverse overview of the research problem, since a number of departments are represented within the sample.

4.3.5 Work Experience of Respondents

The study also gathered on the work experience of the participants. This is because work experience of the participants provides an understanding of the research problem from the perspective of the participants. The following table therefore presents the work experience of the participants.

Table 4.7: Participants' work experience

Item	Number	Percentage
Below 5 years	3	37.5%
5-10 years	2	25%
Above 11 years	3	37.5%
Total	8	100%

The study gathered that the participants have wide and diverse experience within the related field, which is ideal enough in understanding elucidating the research problem. This is because the study gathered that those with experience of less than 5 years that amounted to 37.5% of the sample, those with experience between 5-10 years which amounted to 25% of the sample whereas those with experience of 11 years and above constituted 37.5% of the respondents. This helps to provide a detailed and thorough understanding of the research problem.

4.4 PRESENTATION AND ANALYSIS OF THE QUALITATIVE FINDINGS

Saunders, Lewis and Thornhill (2012) is of the view that data analysis in qualitative research entails the systematic process of bringing into meaning the data gathered. The rationale of data analysis is that information gathered is presented in a coherent format to address the research problem effectively. The study utilised thematic analysis as the data analysis method, therefore data were presented in the form of themes, categories and codes in a schematic form; the meaning of the data could be deduced. Furthermore, the interview guide was utilised as the data collection method, with the research questions in the interview, presented as emerging themes. Through following ethical considerations of protections against any harm, anonymity and confidentiality of information, the study structured respondents according to codes as:

- Participant 1;
- Participant 2;
- Participant 3;
- Participant 4;
- Participant 5;
- Participant 6;

- Participant 7; and
- Participant 8;

4.4.1 Objective 1: Evaluate the nature of the current mentoring programmes in place for the Science teachers in the Gauteng Province

The first objective within the study sought to evaluate the nature of the current mentoring programmes in place for the Science teachers in the Gauteng Province. This objective was premised on the need to understand on the current procedure and method that were utilised to mentor novice Science teachers. This objective serves to outline that it is important to understand the nature of mentoring to comprehend the impact of mentoring on novice Science teachers.

Table 4.8: A schematic representation of development of the emerging themes as per study Objective 1

Codes	Categories	Emerging Theme
<ul style="list-style-type: none"> • Mentoring new teachers to further their profession • Process of dealing with situations as they come 	<ul style="list-style-type: none"> • Empowering the new teacher 	<ul style="list-style-type: none"> • Mentoring novice teachers
<ul style="list-style-type: none"> • Establishment of what the teacher seeks to achieve in their career 	<ul style="list-style-type: none"> • Establishing their vision and goals in the profession 	
<ul style="list-style-type: none"> • Process of managing classroom duties • Process in which teachers are equipped to manage student behaviour 	<ul style="list-style-type: none"> • Training and development 	<ul style="list-style-type: none"> • Current nature of mentoring novice teachers
<ul style="list-style-type: none"> • How to manage learner-teacher ratio • How to manage learners' extra-curricular activities 	<ul style="list-style-type: none"> • Skills development 	

<ul style="list-style-type: none"> • How to effectively communicate • How to manage the curriculum 	<ul style="list-style-type: none"> • Communication and curriculum skills 	
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4.4.1.1 Mentoring novice teachers

The study gathered that mentoring of novice teachers means a number of things.

Method of empowering the novice teacher

As stipulated by Participant 1:

Mentoring of novice teachers refers to the process in which new teachers are empowered to be effective in their work-related tasks and become true professionals in the academic profession.

In conformity, the Participant 2 argued that:

Mentoring of novice teachers can be understood as the opportunity given to the senior teachers in terms of guiding a novice teacher and preparing novice teachers as they embark on their teaching profession.

In essence, Participant 3 simply argued that:

Mentoring of novice teachers is the process in which a new teacher is equipped on how to deal with situations they come across.

This is in conformity with Eby (1997) who explains that mentoring is an intense developmental relationship whereby advice, counselling, and developmental opportunities are provided to a mentee by a mentor, which, in turn shapes the mentee's career experiences. Furthermore, Sweeney (2008) articulates that mentoring is the complex developmental process that mentors use to support and guide their protégés through the necessary transactions that are part of learning how to be effective educators and career-long learners.

Method of establishing a vision and mission of the novice teacher

Mentoring of novice teachers can also be understood as the process in which the senior teacher helps the novice teacher to set up their vision and mission for their success. As stipulated by Participant 6:

Mentoring of novice teachers is the process in which the new teachers are helped on how to structure and establish their vision and mission within the new career. This is because the teachers are given support in their first years as teachers.

Ragins (1997), explains a mentor as an individual with advanced experience and knowledge who is committed to providing upward mobility and support to mentees' careers. This means that mentors are knowledgeable people whose aim is to develop novice teachers in their careers. After mentoring, the mentees are developed and they are more likely to be promoted than those who did not get the mentoring experience. Therefore, mentoring is the ability of the senior teacher or more established teacher in guiding new teachers on how to set their vision and mission in the teaching discourse through empowering them on how to conduct their day-to-day routine.

4.4.1.2 Current nature of mentoring of novice teachers

The study also gathered information on the current strategy utilised to mentor novice teachers. Following, is a discussion on these methods as gathered within the study.

Training and development

The first strategy is through training and development. As stipulated by Participant 1:

The current strategy includes an induction process in which a senior teacher adopts novice teachers and guides them in the discourse of teaching.

In conformity, Participant 2 argued that:

The current state of mentoring of novice teachers is premised on giving new teachers the skills and strategies such as how to handle learners with special needs, how to handle work-related pressure and how to handle a class with a high ratio of learners as compared to the teacher amongst other strategies.

Basically, the mentor and the mentee relationship is the fundamental point underpinning mentoring of novice Science teachers within schools in the Gauteng Province and in South Africa at large. As stipulated by Bozemant and Feeney (2007), mentoring has several functions and one of these strategies is training and development in which the advice and modelling about career development behaviour are affected by the senior teachers. As mentoring is normally offered to an inexperienced professional, career development becomes the main focus of mentoring through training and development.

Skills Development through Psychological Support

The study also gathered that skills development is also a strategy utilised to mentor novice teachers. The Participant 5 argued that:

The current strategy for mentoring novice teachers is premised on assisting the new teacher on how to interpret learner behaviour and communication and help the novice teacher discover how to further their own learning.

In conformity, Participant 7 argued that:

This mentoring for career development is important for it comes with support from both angles, including emotional support, personal support and psychological support.

As stipulated by Bozemant and Feeney (2007), support for career development mentally prepares the novice teacher to gear up and be effective within the teaching environment. Therefore, skills development through support both mentally and psychologically is an important strategy utilised to mentor novice teachers.

Technical Support to enhance Communication Skills and Manage the Curriculum

Another strategy is that of teaching the novice teacher on how to enhance their communication skills and how to manage the curriculum. According to Blackwell (2015), the educational sector, especially teaching is premised on the need to effectively communicate with students so the mentoring strategies adopted in skills ideally seek to enhance the communication skills of the new teacher. As stipulated by Participant 7:

The mentor has to guide the novice teacher with curriculum teaching strategies and communication skills for the new teacher to be effective. This is because curriculum management and effective communication with the learners are the fundamental tools for successful teaching in the classroom.

Furthermore, Participant 8 argued that:

The mentor ideally teaches the novice teacher on how to manage the curriculum, prepare for classes and monitor students with special abilities, and all these are directed under the ideal that effective communication with learners is the ideal way to achieve the goals and objectives of the novice teacher.

According to Blackwell (2015), during mentoring, the mentor and the mentee share values, knowledge and experience that impact on communication skills that are ideal in

enhancing the success of the novice teacher. Within this regard, the mentoring strategies adopted within schools include that of understanding the Science curriculum and how to effectively communicate with the students.

4.4.2 Objective 2: Determine the importance and relevance of mentoring novice natural Science teachers in the Gauteng Province

As stipulated by the first objective, mentoring has many strategies are utilised to achieve a number of goals and objectives. However, these strategies lead to an understanding on the importance and relevance of mentoring novice natural Science teachers in the Gauteng Province. Importance of mentoring of novice teachers in this study relates to the need of the ideal situation and the effect thereof whereas relevance refers to the pertinent issues that mentoring of novice teachers in the Gauteng Province impact in the teaching discourse. This is the reason why the study utilised importance and relevance as separate terms.

Table 4.9: A schematic representation of development of the emerging themes as per study Objective 2

Codes	Categories	Emerging Themes
<ul style="list-style-type: none"> ● Achieving set goals and objectives ● Proper conduct of science classes 	<ul style="list-style-type: none"> ● Raising awareness 	<ul style="list-style-type: none"> ● Importance of mentoring of novice teachers
<ul style="list-style-type: none"> ● Interchange of Science knowledge between the mentor and the mentee ● Benefits to the learner ● Skills to schedule teaching episodes 	<ul style="list-style-type: none"> ● Wide range of expertise 	

<ul style="list-style-type: none"> • Management of laboratory equipment and resources • Student development • Off-line help to assist in class preparation 	<ul style="list-style-type: none"> • How to handle the laboratory 	
<ul style="list-style-type: none"> • Help to become a science expert teacher • Learning from the experienced 	<ul style="list-style-type: none"> • Development of skills and knowledge 	<ul style="list-style-type: none"> • Relevance of mentoring of novice teachers
<ul style="list-style-type: none"> • Ability to manage curriculum, classes and other tasks • Sense of direction on the novice teacher 	<ul style="list-style-type: none"> • Ability to become a better teacher 	

4.4.2.1 Importance of mentoring novice teachers

The study gathered that mentoring novice teachers is important in a number of spheres, both to the teacher, the learners and the academic discourse in its entirety.

Raising awareness

Firstly, mentoring of novice teachers is important for it raises awareness on how to conduct classes. As stipulated by Participant 2:

Mentoring of novice teachers is important for teachers need to be aware of how they teach their students and they also need to be aware of how their learners grasp knowledge, therefore mentoring allows these teachers with the opportunity to approach their teaching to the best of their abilities.

In conformity, Participant 5 was of the view that:

Teachers need to be aware of what and how they teach their students and also need to be aware of how their students are doing, thus mentoring is a positive step towards achieving this.

The goal of mentoring as established by Blackwell (2015) is to achieve the best results capitalizing on the teacher-student relationship and all these are established through mentoring for it raises awareness about the novice teacher on how to conduct their day-to-day business. Awareness, therefore, comes in the ability to understand how the students are doing and how to persuade and monitor the students' success. Therefore, mentoring of novice teachers is important for it helps raise awareness on behalf of the teacher.

Wide range of expertise

Secondly, mentoring of novice teachers is important for it leads to a wide range of Science teacher expertise to achieve the best results within the classroom. According to Participant 3:

Mentoring of novice teachers is important for a wide range of expertise in the field of study and it enables the capability to gather information and knowledge about natural Science which might have been lost and has not been widely shared.

Participant 7 argued that:

Mentoring of novice Science teachers is important for it helps to check on the training that Science teachers received and how relevant it is within the teaching discourse. Mentoring therefore equips the novice teacher on the lacking practical experience and how to improve over time.

Education is all about gathering knowledge and how the gathered knowledge can be used to impact positively on human life (Scandura & Shriesheim, 1994). Therefore, mentoring novice teachers is important for the mentee can gather knowledge from the mentor, knowledge that they did not gather or lost in years of training. Furthermore, this interchange of Science knowledge directly leads to the growth of the learner, which is the goal of education. Mullen and Lick (1999) point out that although mentoring relationships usually are based on levels of higher authority or expert knowledge, in recent days, mentoring has taken a multidimensional view that frames mentorship as a

flexible and interactive process. Therefore, mentoring of novice teachers is effective for it leads to sharing of expert knowledge.

Capacity to handle Laboratory Classes

Thirdly, mentoring of novice teachers is important for it capacitates the novice teacher on how to handle laboratory equipment and chemicals to the benefit of the student. As stipulated by Participant 4:

It is imperative that novice Science teachers acquire mentoring for Science requires a skill of handling laboratory equipment for some of these equipment and chemicals are dangerous and when teaching students, the process can be difficult, therefore there is a need for effective mentoring to sharpen the teaching skills.

In addition, Participant 6 argued that mentoring of novice teachers is important because:

There is need to impart teaching experience to the novice Science teachers and to show them the basics of how to deal with the field of science as a whole.

Participant 8 argued that:

Mentoring is important for it allows the mentor to teach the mentee on how to schedule their teaching episodes and address their point of need for effective delivery within the classroom.

The discourse of Science teaching often involves practical activities that require the use of the Science laboratory. However, at times, these chemicals pose a threat to the well-being of the student if they are not used in effective ways. Therefore, mentoring comes in a way that the novice teacher is equipped in on how to manage these laboratory processes and scheduling so that resources cannot be wasted and also that students may not come to any harm (Sayer, 2002). Within this regard, mentoring is important for it allows the mentee to come up with effective knowledge to manage practical laboratory classes.

4.4.2.2 Relevance of mentoring novice Science teachers

Since the study used both relevance and importance, differently, the study therefore focused on the relevance of mentoring of novice Science teachers.

Knowledge, wisdom and skills impartation

Firstly, the study gathered that mentoring of novice teachers is relevant, because it leads to the impartation of knowledge, skills and wisdom to the novice teacher.

Participant 1 said:

Mentorship is relevant within the Province, and the Country at large for it allows the impartation of knowledge, wisdom and skills by the matured and experienced teachers. Its relevance therefore entails fortifying the mentees in their profession and thus strengthening the education system.

According to Participant 2:

In order for one to be expert teachers within the Science profession, they need to be mentored and helped in knowing all what it takes for teachers to be experts in terms of subject language, terminology, practical, communication and other important teaching variables.

Ideally, mentoring is therefore, relevant for it leads to the development of teaching skills and knowledge of the novice teacher. This can be adopted from the definition of mentoring as postulated by Megginson and Clutterbuck, (1995) who define mentoring as the off-line help by one person to another in making significant transitions in knowledge, work or thinking. Off-line help is the assistance given by another person to a less knowledgeable one. In this study it is a mentor who gives off-line help to a mentee. This disconnected help therefore, ensures that skills in the teaching profession and knowledge on the profession are enhanced.

Ability to become a better teacher

Secondly, mentoring of novice Science teachers is relevant for it leads to the ability of the novice teacher to become a better teacher.

According to Participant 3:

The relevance of mentoring novice Science teachers is that it leads them to become better teachers as mentoring provides the ability to learn from the experienced.

Participant 4 argued that:

Mentoring is relevant for novice teachers who do not have the know-how on delivering education to learners; therefore, mentoring ensures that a sense of direction and expertise are gathered.

Furthermore, Participant 5 argued that:

In order for one to become a better teacher, there should be mentorship taking place for them to be well prepared to face this new profession.

Participant 7 argued that:

Mentors are knowledgeable and experienced so they help novice Science teachers to adopt a direction in relation to how to prepare a new curriculum, learning strategies and how to hold practical lessons.

Ideally, mentoring can make any individual become better in the respective ability. This is the rationale of mentoring for it helps a novice teacher to become informed. According to Leedy (2014), mentors are knowledgeable people whose aim is to develop novice teachers in their careers. After mentoring, the mentees are developed and they are more likely to be promoted than those who did not get the mentoring experience (Leedy, 2014). Therefore, mentoring is essential for it makes the novice teacher, become a better teacher.

4.4.3 Objective 3: Understand the effects and impact of mentoring novice Science teachers in the Gauteng Province

Objective 3 of the study focused on the interpretation of the effects and the impact of mentoring novice Science teachers in the Gauteng Province. The previous research objectives arguably gave rise to the successive objectives and focused on understanding, the nature, importance and relevance of mentoring novice to address the need to understand the impact of mentoring novice teachers.

Table 4.10: A schematic representation of development of the emerging themes as per study objective 3

Codes	Categories	Emerging themes
<ul style="list-style-type: none"> • Knowledge and practical based teaching • Understanding the needs and demands of the students 	<ul style="list-style-type: none"> • Excellent and effective teaching 	<ul style="list-style-type: none"> • Impact of mentoring on novice science teachers

<ul style="list-style-type: none"> • Retention of experienced teachers • Career development 	<ul style="list-style-type: none"> • Teacher retention 	
<ul style="list-style-type: none"> • Gaining skills, attributes and methods that increase on delivery • Experienced teachers 	<ul style="list-style-type: none"> • Improved self-delivery 	
<ul style="list-style-type: none"> • Feeling confident in their abilities • Feeling the support of the mentor 	<ul style="list-style-type: none"> • Emotional & psychological well-being of teachers 	

The study gathered that there are various and wide influences of mentoring of novice Science teachers.

Excellent and effective teaching

Mentoring of novice teachers has an impact in that it leads to the creation of an effective and excellent teaching environment. According to Participant 1:

The impact of mentoring novice Science teachers is stipulated through the outcome of effective and excellent teaching, because relevant knowledge would have been disseminated thereby enabling the novice teachers to prosper in the scientific field.

According to Participant 2:

Mentoring novice teachers ensures that these teachers become the best within the Science profession as they have acquired the basic training and development from the mentoring processes.

Generally, the mentoring of a novice teacher influences the job satisfaction and teacher efficacy which lead to excellent and effective teaching. According to Humphrey and Matsko (2010):

Teachers who received more intensive mentoring, whose induction had a strong focus on instruction, who received a variety of induction support and who worked in

supportive school contexts, reported greater improvement in their instructional practice.

It is within this regard that one can argue that effective and excellent teaching are a result of mentoring of novice teachers.

Teacher retention

The study also gathered that mentoring of novice teachers lead to higher levels of teacher retention. Participant 8 opined:

Mentoring novice teachers ensures that a certain degree of career development and guidance is modelled in regard to the teacher; therefore there is career retention as the new teacher would have achieved all the moral, technical and psychological support.

In conformity, Participant 6 argued that:

Just like training and development mechanisms that are part of organisations, mentoring novice teachers can be viewed in that perspective for it leads to employee satisfaction. Satisfied employees stay within the vicinity of the workplace and work to the best of their ability to ensure organisational success. This is the same with mentoring novice Science teachers who gather the ability and comfort to be effective.

Ingersoll and Smith (2004:20) report that “there was a 29% reduction in attrition rates where regular partnerships with experienced teachers were formed which went beyond basic induction.” In this regard, most effective induction programmes offer plenty of support in the form of providing mentors from the same discipline, prospects to engage in group or joint planning activities (Ingersoll & Smith, 2004). This shows that there is a high retention of teachers in cases where effective mentoring has been put in place. Therefore, there is a significant correlation between mentoring and retention

Improved service delivery of teachers

In addition, the impact mentoring of novice Science teachers in the Gauteng Province is that it leads to improved service delivery by the new teacher. Participant 3 argued that:

Mentoring impacts the novice teacher for it improves the delivery of Science as a subject, which is important in the socio-economic development of South Africa.

Participant 5 argued that:

Mentoring novice teachers has an impact on producing the novice teacher with the required teaching experience.

Participant 6 argued that:

In most cases, novice teachers do not have the required material to be effective in their day-to-day teaching profession; therefore, mentoring ensures that this gap is filled and that a certain level of progress on the part of the novice teacher's career is enhanced.

Improved service delivery is as a result of mentoring of novice teachers. In the same vein, Harland and Kinder (2007) suggest, changes in subject skills and knowledge, change in the confidence self-esteem, deeper educational understanding, clearer rationale for actions, more consideration, greater ability to lead change and greater contentment all emanate from induction of the novice teacher and impacts on service delivery.

Emotional and Psychological well-being of teachers

The impact of mentoring novice Science teachers is that it builds on the emotional and psychological well-being of teachers, leading to increased performance amongst other positive attributes. According to Participant 5:

Mentoring impacts on the well-being of the novice teacher for it leads to a gain in confidence, feeling the support of the mentor and other psychological support that lead to increased service delivery.

In a study conducted by Humphrey and Matsko (2010), several teachers mentioned that they gained self-confidence through group meetings in which they could hear about their colleagues' experiences, which were not all that successful either. Events like special meetings for beginning teachers helped novice teachers to get to know their workmates and prevented them from feeling alone. The support of a mentor has since time immemorial made new teachers feel supported (Mouton, 2001). Harland and

Kinder (2007), report that in spite of differences between induction programmes, virtually all teachers who had received at least some support from an induction program confirmed that it had a positive influence on their well-being.

4.4.4 Objective Four: Recommendation on the interventions that can be proffered to improve mentoring novice natural Science teachers for improved teaching conditions in the Gauteng Province

The fourth recommendations within the study sought to recommend the interventions that can be proffered to improve mentoring novice natural Science teachers for improved teaching conditions in the Gauteng Province. The study therefore sought to first gather recommendations on the role of the government and respective authorities on how to come up with policies and mechanisms for effective mentoring and recommendations based on the general understanding of the research problem.

Table 4.11: A schematic representation of development of the emerging themes as per study Objective 4

Codes	Categories	Emerging themes
<ul style="list-style-type: none"> • Need for cordial relationship between two groups • Managing the generation gap 	<ul style="list-style-type: none"> • Connection of the mentors with the mentees 	<ul style="list-style-type: none"> • Recommendations to the government
<ul style="list-style-type: none"> • Specific programme addressing Science teachers • Advent of mentors in the science field • Classroom practices 	<ul style="list-style-type: none"> • Mentoring for science teachers 	

<ul style="list-style-type: none"> • Resources for effective mentoring • Human capital resources 	<ul style="list-style-type: none"> • Enough resources 	
<ul style="list-style-type: none"> • Specific programme • Specific budget 	<ul style="list-style-type: none"> • Development of a natural science mentoring programme 	<ul style="list-style-type: none"> • General recommendations
<ul style="list-style-type: none"> • Sharpening the leadership skills • Enhancing inter-personal skills 	<ul style="list-style-type: none"> • Training and development of mentors 	

4.4.1.1 Recommendations to the Government

The study gathered information on various recommendations to the government from the participants in relation to the study. Following is a discussion on these recommendations.

Connection of the mentors with the mentees

The study gathered that there is need for the government to initiate a process that ensures that there is a relationship and connection between the mentor and the mentee.

Participant 1 opined:

The experts, particularly professors, doctors and other proficient members in the field of study who take part in these mentorship programs, should be connected to the youth who in most cases are the novice teachers, to allow the sharing of knowledge and skills in the related field.

This recommendation comes from the challenges faced by both the mentor and the mentee in addressing the generation gaps that often exist between these two groups. There is therefore, the need to come up with processes and solutions that address these gaps for mentoring to impact on novice teachers.

Mentoring programme for Science teachers

The study also gathered that there is need for a specific mentoring programme targeting natural Science teachers. This is coming from the perspective that schools ideally have a hybrid mentoring strategy that encompasses everyone and is not specific.

Participant 1 posited that:

There is need for mechanisms that ensure that natural Science teachers are not neglected by these mentorship programmes for in most cases, mentorship initiatives tend to neglect on these teachers. An effective mentoring of Natural Science teachers will therefore assist schools as well as learners to improve in Science subjects.

Participant 4 agreed and said:

The science field should be supported in the recruitment of effective and efficient mentors to enhance the continuous support of mentoring on the novice teacher.

Furthermore, the Participant 7 argued that:

There should be common classroom practices in which mentors are actually invited to the classroom and evaluate the process in which the novice teachers conduct their day-to-day job related tasks. Furthermore, this process should be vice versa as the mentee should constantly attend classes of the mentor and understand how studies are being conducted.

In other words, there should be enough mentors to guide on the natural Science teachers for mentoring to impact the novice Natural Science teachers

Enough Resources for mentoring

The study also gathered that the government should avail enough funds to ensure that mentoring is effective. According to Participant 6:

The government should make sure that there are enough funds for the mentoring programme to achieve its stated goals and objectives. Funding ensures that there is enough equipment and human capital for an effective mentoring process.

In addition, Participant 8 argued that:

The government must come up with a strict policy that ensures that all novice teachers are effectively part of the mentoring process and funds for such a programme should be readily available.

It is within this perspective that the study gathered that there is need for efficient resources to ensure that mentoring impact on novice Natural Science teachers

4.4.1.2 General recommendations

The study also gathered information on the general recommendation of the impact of mentoring on novice teachers within the Gauteng Province.

Development of a Natural Science mentoring programme

The study gathered that there is need for the development of a mentoring programme that targets novice Natural Science teachers effectively.

According to Participant 6:

There is need for a development of a programme that caters for the needs of novice Natural Science teachers and there is need for the allocation of a budget intended for scholarships, infrastructure and workshops where opportunities for sharing knowledge in regards to Natural Sciences are catered for.

Participant 6 argued that:

There is need for a special budget targeting Natural Science teachers and the creation of mentoring initiatives for them alone. This is because the Natural Sciences sections have been affected for a long time and there is need to address these challenges in a bid to create an effective and efficient base for Natural Sciences.

Ideally, a development of an effective Natural Science programme with ideal resources given towards the programme will lead a way in ensuring that mentoring impact on novice Natural Science teachers.

Training and development of mentors

The study also gathered that for mentoring to impact on the novice Natural Science teacher, there is need for mentors to also go through a comprehensive training and development programme.

Participant 8 was of the opinion that:

There is need for training and development of the mentors to ensure that they are fully equipped to guide the novice teachers in curriculum management, communication skills and other important teaching aspects.

Participant 5 also argued that:

Mentors should be taught on how to be effective in the mentoring and remain patient amongst other inter-personal skills. The mentor impacts directly on the path of the mentee, therefore there is need to ensure that the mentor is up-to task.

Training and development are therefore essential in ensuring that mentorship impacts the Natural science novice teacher.

4.5 CONCLUSION

This chapter presented the results, findings and analysed the results in reference to the research problem: mentoring novice Natural Science teachers within the Gauteng Province. The study gathered a response rate of 80% which is ideal enough to structure recommendations on the research problem. Furthermore, the study utilised important demographic details in relation to the study, which were ideal to understand the research problem effectively. Within this framework, the study therefore attempted to interpret the effects and impact of mentoring novice Science teachers. Furthermore the focus was on the evaluation of the current mentoring programmes in place for the Science teachers. In addition the idea was to determine the importance and relevance of mentoring novice Natural Science teachers in the Gauteng Province and to propose recommendations on the interventions that can be proffered to improve mentoring novice Natural Science teachers to improve teaching conditions in the Gauteng Province. The following chapter therefore presents the conclusions and the recommendations of the study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented the findings and analysed the findings in relation to the research. However, this chapter presents the conclusions and recommendations of the study. This chapter first presents the conclusions of the study gathered from both the primary study and the literature review. A synthesis of the findings therefore is presented as conclusions. Furthermore, this chapter presents the recommendations gathered from the study as a whole. The study also identifies areas for future research and these will be outlined within this chapter as well.

The study gathered the following conclusions

5.2

5.2.1 Mentoring novice teachers

The study concludes that mentoring novice teachers refers to the empowerment of new teachers to be effective in their work-related tasks to become true professionals in the academic profession. This is in agreement with Eby (2007), who explains that mentoring is an intense developmental relationship whereby advice, counselling, and developmental opportunities are provided to a mentee, by a mentor, which in turn shape the mentee's career experience. Furthermore, the study concludes that mentoring can be understood as the method of establishing a vision and mission of the novice teacher. This is because the novice teacher requires the help of a senior teacher or another professional to be effective in their professional pursuit. As explained by Ragins (1997), a mentor is an individual with advanced experience and knowledge who is committed to providing upward mobility and support to mentees' careers. This means that mentors are knowledgeable people whose aim is to develop novice teachers in their careers. After mentoring, the mentees are developed and they are more likely to be promoted than those who did not get the mentoring experience.

5.2.2 Current strategies of mentoring novice teachers

The study concludes that there are a number of mentoring initiatives and mechanisms utilised to mentor novice teachers. Amongst these programmes training and development surface as forms of induction processes, since the senior teachers adopt novice teachers and guide them in the discourse of teaching. This process ensures that the novice teacher acquires the skills and strategies such as how to handle students with special needs, how to handle work related pressure and how to handle a class with a high ratio of students as compared to the teacher (Ragins, 1997). Skills development is also a strategy utilised to mentor novice teachers. This strategy is premised on assisting the new teacher on how to interpret student behaviour and meanings and help the novice teachers discover how to further their own learning. The study also concludes that technical support to enhance communication skills and managing the curriculum effectively is also another current strategy utilised. Within this strategy, the mentor has to guide the novice teacher with curriculum teaching strategies and communication skills for the new teacher to be effective.

5.2.3 Importance of mentoring novice teachers

The study concludes that mentoring of novice teachers is important within the Gauteng Province. Firstly, mentoring of novice teachers is important for it raises awareness on how to conduct classes as novice teachers need to be aware of how they teach their students and also need to be aware of how their learners grasp knowledge, therefore mentoring allow these teachers with the opportunity to approach their teaching to the best of their abilities. Secondly, mentoring of novice teachers is important for it leads to a wide range of expertise on the part of the Science teacher to achieve the best results within the classroom. Mentoring of novice teachers is important for a wide range of expertise in the field of study is provided thereby enabling the capability to gather information and knowledge about Natural Science which might have been lost and has not been widely shared. Thirdly, the study concludes that mentoring of novice teachers is important for it capacitates the novice teacher on how to handle laboratory equipment and chemicals to the benefit of the student. It is imperative that Novice Science

teachers acquire mentoring for Science requires a skill of handling laboratory equipment for some of the equipment and chemicals are dangerous and when teaching students, the process can be difficult, therefore there is a need for effective mentoring to sharpen the teaching skills.

5.2.4 Relevance of mentoring of novice Science teachers

The study also concludes that mentoring of novice teacher is relevant within the Gauteng Province. Firstly, mentoring of novice teachers is relevant because it leads to the impartation of knowledge, skills and wisdom on the novice teacher. Mentoring allows the sharing of knowledge, wisdom and skills from the matured and experienced teachers. It therefore transpires that fortifying the mentees in their profession consequently strengthens the education system. The study also concludes that mentoring novice Science teachers is relevant for it leads to the ability of the novice teacher to become a better teacher. Mentoring leads them to become better teachers as mentoring provides the ability to learn from the experienced. Mentors are knowledgeable and experienced so they help novice Science teachers to adopt a direction in relation to how to prepare a new curriculum, learning strategies and how to hold practical lessons. Therefore, mentoring makes any individual become better in the respective ability.

5.2.5 Impact of mentoring novice Science teachers

The study concludes that mentoring impacts novice Science teachers. Mentoring of novice teachers has an impact in that it leads to the creation of an effective and excellent teaching environment. The impact of mentoring novice Science teachers is stipulated through the outcome of effective and excellent teaching, because relevant knowledge would have been disseminated thereby enabling the novice teachers to prosper in the Science field. Furthermore, mentoring exerts a powerful influence on novice Science teachers as it leads to higher levels of teacher retention. Mentoring novice teachers ensures that a certain degree of career development and guidance is modelled to equip the teacher; therefore there is career retention as the new teacher would have achieved all the moral, technical and psychological support. In addition, the

impact of mentoring novice Science teachers in the Gauteng Province is that it leads to improved service delivery by the new teacher. Mentoring impacts the novice teacher for it improves the delivery of Science as a subject, which is important in the socio-economic development of South Africa. The study also concludes that the impact of mentoring novice Science teachers is that it builds on the emotional and psychological well-being of teachers, leading to increased performance amongst other positive attributes. Mentoring impacts the well-being of the novice teacher for it leads to a gain in confidence, feeling the support of the mentor and other psychological support that leads to increase service delivery.

5.3 RESEARCH QUESTIONS ANSWERED

- What is the nature of the current mentoring programmes in schools for the Science teachers in the Gauteng Province?

Science teachers do not have proper mentoring programmes in place to assist them in executing their work effectively. Much must still be done in support of these teachers who are held accountable for their learners' poor performance.

- What is the importance of mentoring novice natural Science teachers in the Gauteng Province?

It is critical that Science teachers be mentored in order to upgrade their performance so that they have the know-how of how to go about teaching the subject. All Science teachers are not trained to teach the subject and have to cope with the academic challenges in class. A mentoring programme can inform the teachers on salient aspects that can help them to cope with the demands and the problems they face daily. These suggestions are further explored in the recommendations that follow.

- What interventions can be made for mentoring novice Natural Science teachers to improve learning capabilities for students in the Gauteng Province?

Science teachers can attend workshops and they can receive more assistance from the DoBE. Collaborative groups can also help to upgrade the skills and knowledge of the Science teachers.

5.4 RECOMMENDATIONS OF THE STUDY

The study proffers the following recommendations to the Government and general:

5.4.1 Resources for effective mentoring of novice Science teachers

The study recommends that there is need for the government and relevant stakeholders to avail the much needed financial and human capital resources for mentoring to impact novice natural Science teachers. Firstly, there is need for a budget that specifically is allocated to meet the infrastructure, human capital and other needs that facilitate the mentoring of Science teachers. Furthermore, there is need for effective resources that support training and development camps as well as workshops and conferences that are targeted towards empowering novice Science teachers. Therefore, the study recommends that there is need for resources and effective mentoring of novice Science teachers.

5.4.2 Training and development for mentors

The study recommends that the government and schools need to initiate programmes that equip mentors to be effective. For mentoring to impact positively on novice natural Science teachers, there is need for the mentors to be fully equipped and motivated to be part of this process. If a trainer is not capacitated, the trainee will not learn anything. This is the reason the study recommends that there is need to ensure that mentors are capacitated to do so.

5.4.3 Mentoring programme for Science teachers

The study also recommends that there is need for a specific mentoring programme targeting Natural Science teachers. This is coming from the perspective that schools ideally have a hybrid mentoring strategy that encompasses everyone and is not specific. This will ensure that Natural Science teachers are not omitted from these

mentorship programmes for in most cases, mentorship initiatives tend to neglect these teachers. An effective mentoring of Natural Science teachers will therefore see schools as well as learners to Science subjects. Therefore, the Science field should be supported in the recruitment of effective and efficient mentors to enhance the continuous support of mentoring on the novice teacher.

5.5 AREAS FOR FUTURE STUDY

The study was premised on the need to analyse the impact of mentoring novice Science teachers within the Gauteng Province. The following recommendations therefore can be made for future studies:

- Future studies can look at the role of the government in supporting the mentoring programme of novice teachers across all disciplines. This is because the government plays a critical role in implementing this process that can benefit the educational sector in South Africa;
- The study can also utilise different tools to achieve the same objective. Since this study was an exploratory study, the quantitative approach with a larger sample can survey the impact of mentoring novice Natural Science teachers within the country at large. This will help answer the research question through utilising a larger sample which can be effective in understanding the research problem; and
- The study also recommends that a comparative study can be conducted based on provinces in trying to understand the impact of mentoring novice natural science teachers.

In summary, the findings from the study help to understand the impact of mentoring novice Natural Science teachers. This study therefore, is helpful for it identified what mentoring refers to namely the nature of mentoring, the importance and relevance of mentoring and the impact of mentoring on novice Natural Science teachers. The recommendations proffered areas for future studies that can contribute to solutions to the research problem.

KEY TERMS DESCRIBING THE TOPIC OF A DISSERTATION/THESIS

Title of thesis/dissertation:

MENTORING NOVICE NATURAL SCIENCE TEACHERS: A CASE STUDY IN THE GAUTENG PROVINCE

KEY TERMS:

Mentoring; Novice Natural Science Teachers; Gauteng Province; Senior Education Specialist; Laboratory; Supportive Programmes; Training and Development; Learners, Induction; Mentor; Mentee; Facilitation

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APPENDIX A: PERMISSION LETTER

14 April 2018

The principal

Winnie Mandela Primary School

5882 Solomon Mahlangu Street

Tembisa 1632

Dear Sir/Madam,

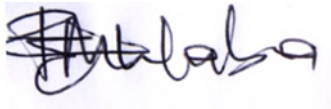
A request for permission to conduct a research

I am a student at the University of South Africa (UNISA) pursuing a Master's Degree Education. The title of my study is: *Teachers' perceptions on learner-centred approach: A case of selected primary in Ekurhuleni North*. This is part of the requirements of my degree programme.

I am therefore asking permission to conduct the research at your school on mentoring novice Natural Science teachers. The permission will enable me to commence with data collection.

Thank you very much and I am looking forward to hear from you soon.

Faithfull yours

A handwritten signature in black ink, appearing to read 'Mhlaba Rabela Esther', written in a cursive style.

Mhlaba Rabela Esther

APPENDIX B: CONSENT LETTER

Dear Sir/ Madam,

I am a student at the University of South Africa (UNISA) pursuing a Master's Degree Education at the University of South Africa. I am conducting research on the topic entitled: *Mentoring of novice Natural Science teachers in selected schools at Ekurhuleni North district*. This is part of the requirements of my degree programme.

I am therefore, asking you to take a few minutes of your time to complete the attached questionnaire to show your views, opinions and perceptions on learner-centred approach. Participation is voluntary. You are free to withdraw from participation should you wish to do so. You are assured that all your answers will be treated in a confidential manner and will not in any way be identified with you as an individual.

This research is conducted under the supervision of Dr. Rankumise M.P at UNISA. Any questions regarding this research can be directed to me or my supervisor through the following contacts:

Dr. M.P Rankumise (Supervisor)

Department of Science & Technology UNISA

Tel: 082 687 6644

Email: RankumiseMP@tut.ac.za

Rabela Esther Mhlaba(Researcher/Student)

3674 Xenon Lane

Clayville Ext 33

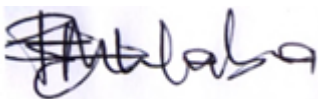
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1666

Email: rabellaesther@gmail.com

Cell: 078 5333 672

Yours faithfully



Mhlaba Rabela Esther

2. What are the effects and impact of mentoring novice Natural Science teachers in the Gauteng Province?

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.....
.....

3 SECTION D: RECOMMENDATIONS ON HOW MENTORING NOVICE NATURAL SCIENCE TEACHERS CAN IMPROVE SERVICE DELIVERY

1. What recommendations would you proffer to the South African government for enhanced mentoring on novice teachers?

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2. What recommendations would you give in relation to the discourse of mentoring Natural Science novice teachers?

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