CHAPTER ONE

ORIENTATION

1.1 INTRODUCTION

In South Africa, the need for large-scale educational changes has largely been articulated in response to the educational system of apartheid. The entire curriculum shift in post apartheid South Africa, essentially seeks to alter educators' classroom practices. Sarason (cited in Hargreaves, 1994:49) echoes that significant change in curriculum is unlikely to be successful if serious attention is not paid to educator development. Skemp (1989:211) commenting on educator development states the following:

> ***'Those who learn from one who is still learning drinks from a running stream, those who learn from one who has ceased to learn drinks from a stagnant pond.'***

This comment is as applicable in 2003 as it was in 1989. Whatever the underlying drives of educational change may be, any debate on the pivotal role of educators as frontline implementers of changing classroom practices, must focus on the need for educators to be involved in ongoing programmes of professional development. In keeping abreast with the current knowledge explosion and rapid rate of technological growth, educators are under serious obligation to improve their expertise, knowledge and skills through In-Service Education and Training (INSET).

Pre-Service Education and Training (PRESET) serves only as preparation for entry into the teaching profession and cannot last the whole teaching career. Bagwandeen (1991:1) affirms that, the education of educators does not end with their departure from University or College. He elaborates further that, as long as knowledge about education continues to evolve and new techniques and devices are established, there will be something new for educators to learn, regardless of their qualifications or years of experience.

Hofmeyr (1994:37) in remarking on INSET in the South African context claims that INSET requires an enabling policy framework which links PRESET and INSET in a continuum of educator development. She claims further that, educator development must be underpinned by the values of non-racism, non-sexism, democracy, equity and empowerment and that educator competence should be based on effective classroom teaching and learning. This leads the researcher to the following statement made by Darling-Hammond (1997:155):

> ***'The quality of teaching and learning in countries like Germany, France and Japan are considerably better due to their preoccupation with making direct investments in continuous training and capacity-building of their teachers.'***

1.2 FACTORS LEADING TO THE RESEARCH

The motivational factors for undertaking this research are two fold. Firstly, personal experience has led to an interest in the teaching of mathematics in the senior primary phase and secondly, current reform initiatives call for reflective practices.

The researcher, a senior primary mathematics educator, has experienced disappointment over the years by the observed conservatism displayed by educators introduced to new ideas in the teaching of mathematics. Educators lack enthusiasm towards methods of instruction different from the 'educator tell' type of lesson. Furthermore, educators still believe that they are sole transmitters of knowledge. These beliefs could provide a barrier to facilitate opportunities for learners to learn mathematics independently.

This lack of enthusiasm for innovation and change is problematic in a context in which changing classroom practices, based on an alternative paradigm shift for teaching and learning mathematics is being introduced. This envisaged research, seeking to examine the INSET needs of primary school mathematics educators with particular reference to senior primary mathematics in KwaZulu-

Natal (KZN) is a response to the more reflective role required of mathematics educators.

1.3 STATEMENT OF THE PROBLEM

Initial reading indicated that the INSET needs of senior primary mathematics educators as a theoretical and conceptual study was neglected in South Africa. This could be largely attributed to the fact that, under the previous government of apartheid, the fragmented Departments of Education had their unique problems and each Department attempted to resolve these problems in the best way it deemed fit.

With regard to the INSET needs of senior primary mathematics educators, it was resolved to analyse and evaluate the theories, methodologies as well as various models of INSET and primary school mathematics. The critical questions that emanated from the statement of the problem are:

- What are the strategies concerning the INSET needs of senior primary mathematics educators?
- What is the theoretical and conceptual framework that would inform the provision of INSET of mathematics educators at the senior primary level?

Sub-questions arising from these critical questions are:

- What can we learn from the experiences of the INSET of senior primary mathematics educators in a developed country?
- What are the problems relevant to the INSET of senior primary mathematics educators in KZN?
- What are the views of educators about expressing the problems they experience in mathematics teaching in the primary schools in KZN?
- What are some of the conclusions and recommendations that could lead to the effective provision of INSET of senior primary mathematics educators?

1.4 THE PURPOSE OF THE RESEARCH

The basic aim of the present research is to examine ways in which mathematics teaching in the senior primary phase can be enhanced through INSET. The following specific aims may be listed:

- To determine the theoretical and conceptual framework that would lead to the effective INSET of senior primary mathematics educators.
- To determine who is responsible for the provision of INSET of senior primary mathematics educators.
- To determine the possible problems that could be encountered in the provision of INSET of senior primary mathematics educators.
- To determine the nature of INSET courses for senior primary mathematics educators.
- To determine the need for mathematics educators to keep abreast with the developments in mathematics.
- To undertake an empirical investigation with respect to the provision of INSET of senior primary mathematics educators.
- To make recommendations for the effective INSET of senior primary mathematics educators.

1.5 RESEARCH METHODOLOGY

A descriptive and qualitative analysis mode of study was employed. McMillan and Schumacher (1993:373) argue that qualitative research is concerned with understanding the social phenomenon from the participants' perspective. Understanding for McMillan and Schumacher is acquired by analysing the contents of the participants and by narrating meanings for these situations and events. Participants' meanings include their feelings, beliefs, thoughts and actions.

Bogdan and Biklen (1982:27) list the following characteristics of qualitative research:

- It has the natural setting as the direct source of data.
- It is descriptive, with emphasis on words rather than numbers.
- It is concerned with processes rather than products or outcomes.
- Data is analysed inductively.
- Meaning made by different participants is of essential concern.

In addition to an empirical investigation of the research topic through the use of questionnaires, source material was also derived from various sources. Reference will now be made to the various sources.

1.5.1 DOCUMENTARY STUDY

A detailed literature review comprising books, Sabinet, Eric and HSRC database, university catalogues, internet, relevant articles in periodicals and journals and research dissertations and theses were used to obtain information on the following:

- Theories, methodologies as well as various models of INSET and primary school mathematics.
- The evaluation of mathematics teaching and the INSET of senior primary mathematics educators in England.
- The general provision of INSET in KZN prior to 1994.
- Current educational reforms in South African education.

1.5.2 RESEARCH BY QUESTIONNAIRE

In attempting to evaluate the INSET of senior primary mathematics educators in KZN, an empirical investigation through a questionnaire (See Appendix H) was undertaken: the objective being to collect necessary data and feedback. In addition, permission was granted to conduct the research by the Acting Director: Education and Support Services (See Appendix E).

The questionnaire was designed taking cognisance of the increasing awareness for the improved INSET of senior primary mathematics educators. This increasing awareness could be

attributed to the current educational reforms and changes in classroom practices.

Questions were also included in the questionnaire to collect updated data concerning the educator's mathematics qualification, gender, age and mathematics teaching experience. These details were integral to the research as they affect the special circumstances of educators such as:

- Married women having to have special requirements in terms of the INSET course timing and attendance.
- The younger educators' needs for INSET would differ from the needs of experienced educators.

1.6 ASSUMPTIONS AND LIMITATIONS OF THE RESEARCH

1.6.1 ASSUMPTIONS

This study is based on the following assumptions:

- That mathematics teaching in the primary schools require specialised educators.
- That INSET be used as the vehicle for effective mathematics teaching and learning in the primary school.
- That INSET requires a policy framework that must be enshrined in legislation by a committed state.
- That school focused INSET is a recurring process leading to ongoing educator development in mathematics teaching in the primary school.

It is also assumed that the mathematics educators in the primary schools responded without bias or prejudice to the questions included in the questionnaire. In this regard, a letter was attached to the questionnaire explaining the collation of data (See Appendix F). In selecting the schools, it is assumed that the sample of educators who completed the questionnaire is a good approximation of the total population of senior primary mathematics educators in KZN.

1.6.2 LIMITATIONS

Like many research studies of this nature, the study has the following limitations:

One limitation concerns the return rate of questionnaires. 74% of the educators responded. It was not possible to determine why 26% of the original sample preferred not to participate in the study. Furthermore, it cannot be determined whether their non-participation has had a significant impact on the outcome of this study.

Another major drawback in this research was the limitation experienced by the researcher in locating source materials concerning the INSET of senior primary mathematics educators in a developing country (See Appendix A, B and C). Due to this limitation, the sub-section concerning the INSET needs of primary school mathematics educators in a developing country was excluded in this study. This is regrettable, because in order to contextualise the research topic, this information would have been of integral value.

1.7 RESEARCH LOCATION

This research was undertaken in the province of KZN. It involved a sample of primary schools as time, safety and cost made it impossible for the researcher to send questionnaires to all the primary schools in the area of study.

1.8 THE POTENTIAL SIGNIFICANCE OF THE STUDY

The potential significance of this research is to:

- Provide a theoretical and conceptual framework that would lead to effective INSET of senior primary mathematics educators in KZN.
- Highlight the current INSET of senior primary mathematics educators KZN.
- Contribute to further research on the INSET of senior primary mathematics educators.

1.9 THE STRUCTURE OF THE RESEARCH

This study is comprised of six chapters:

In Chapter One an orientation of the research is presented. An introduction to the study, factors leading to the research, a statement of the problem, the purpose of the research, the methods used in the study, the assumptions and limitations of the research, research location and the potential significance of the study are presented.

Chapter Two is critical to the study as it presents a theoretical and conceptual framework. The definitions of INSET and concepts relevant to INSET and mathematics as a discipline are discussed. This is followed by the aims and objectives of INSET and mathematics. Selected models and theories associated with INSET and mathematics are also enunciated.

In Chapter Three a brief history of mathematics is provided, followed by a presentation of the evolution of mathematics teaching and the INSET of senior primary mathematics educators in England.

Chapter Four focuses on the general provision of INSET in KZN prior to 1994. This is followed by an evaluation of the current INSET of senior primary mathematics educators in KZN. The contribution of Non-Governmental Organisations (NGOs) is also highlighted in this chapter.

Chapter Five discusses the empirical investigation. A description of the research methodology including the instrument, the selection of samples and the techniques employed were given. This was followed by a detailed analysis of the data obtained from the questionnaires

Chapter Six comprises findings, recommendations and conclusion based on the general survey and the empirical investigation discussed in Chapter Five.

1.10 CONCLUSION

In this chapter, an introduction to the study was provided. Factors leading to the research, statement of the problem and the purpose of the research were outlined. In addition, a description of the method of study, assumptions and limitations of the research, the research location and the potential significance of the study were detailed, followed by an outline of the structure of the study. The outline of the structure of the study took the form of a synopsis of the content of each chapter of this study.

In the next chapter a theoretical and conceptual framework of the research topic will be outlined. This chapter is critical to the study, as it would inform the provision of INSET of senior primary mathematics educators in KZN.