

CHAPTER 6

FINDINGS, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

The findings, conclusions and recommendations of this study have particular relevance for the senior primary mathematics educator and Educational Authorities of mathematics education. The findings have shown that central to the importance of mathematics is the consensus that INSET is vital and pivotal to the ongoing enhancement of mathematics teaching and learning in the senior primary phase in KZN. Educational Authorities cannot afford to ignore the importance of INSET and need to give it high priority. This can be made possible, *inter alia*, by effecting the recommendations provided in this study.

6.2 SUMMARY OF THE STRUCTURE OF THE STUDY

This study comprised of six chapters. Chapter One provided the background to the study. Chapter Two presented a theoretical and conceptual framework which is critical to the study.

In Chapter Three a scan of the evolution of mathematics teaching and the INSET of senior primary mathematics educators in England was undertaken. Chapter Four comprised an analysis of INSET of educators with particular reference to mathematics in the primary schools in KZN.

The results of an empirical investigation, through a detailed questionnaire filled in by senior primary mathematics educators in the Department of Education and Culture: KZN, was presented and discussed in Chapter Five. Chapter Six comprised findings, recommendations and a conclusion based on the literature survey and the empirical investigation.

6.3 SUMMARY OF MAJOR FINDINGS

The analysis of data from the questionnaire yielded the following findings in respect of:

6.3.1 **FINDINGS PERTAINING TO PERSONAL PARTICULARS OF SENIOR PRIMARY MATHEMATICS EDUCATORS**

- The survey revealed that 67,1% of the educators teaching senior primary mathematics are females.
- Majority (35,4%) of senior primary mathematics educators are in the age category of 31 – 35 years.
- The bulk (84,4%) of senior primary mathematics educators have 6 – 20 years of experience in teaching mathematics.
- Presently, there are only 19,4% of senior primary mathematics specialists. Precisely 80,6% of senior primary mathematics educators are non-specialists.
- The survey also revealed that 62,9% of the primary schools are situated in the urban areas.

6.3.2 **FINDINGS PERTAINING TO SCHOOL FOCUSED INSET**

- The survey reveals that 65,8% senior primary mathematics educators receive supervision in mathematics from respective members of management.
- 98,7% of the respondents indicated that mathematics committee meetings are conducted in their schools.

6.3.3 **FINDINGS PERTAINING TO THE SCOPE, NATURE AND NEEDS FOR INSET**

- Senior primary mathematics educators acknowledged that the very nature of teaching demands commitment, keeping abreast of developments, improving one's skills and competence, maintaining a high professional standing and providing quality mathematics education.

- 68,8% of senior primary mathematics educators attend INSET courses.
- Approaches generally not realistic at INSET courses and travelling to INSET venues constituted a major problem for 31,2% of the senior primary mathematics educators that did not attend INSET courses.
- The majority (98,7%) of the senior primary mathematics educators rated the relevance of INSET courses, seminars and workshops attended as somewhat relevant to extremely relevant.
- 100% of the respondents indicated that INSET courses, seminars and workshops should be conducted during school hours.
- The survey reflected the expository or deductive method and inductive or discovery method as frequently used teaching methods in senior primary mathematics teaching.
- The survey also revealed that the OBE approach is occasionally used.
- The majority (31,6%) of the senior primary mathematics educators indicated that they never used teaching aids when teaching mathematics.
- The chalk and talk, groupwork and games teaching strategies seemed to be popular among the senior primary mathematics educators.
- The problem solving strategy posed a threat to 38,4% of the senior primary mathematics educators.

The overall findings acknowledge the need for INSET. These findings also have implications for further research as well as strategies to be implemented to address the INSET needs of senior primary mathematics educators.

6.4 RECOMMENDATIONS

Emanating from the literature survey, study of a developed country, the status quo of INSET for senior primary mathematics educators in KZN and the empirical investigation the researcher suggests the following as recommendations for the INSET of senior primary mathematics educators. The following recommendations are illustrative of the kind of strategies that may be utilized to improve the teaching and learning of mathematics.

6.4.1 INSET POLICY

For the INSET of senior primary mathematics educators to be successful there is a need to establish a national and provincial policy for INSET. The researcher is of the firm belief that the most direct way of raising the quality of learning and teaching is through a comprehensive reform and redirection of INSET. The facilities of education in universities, colleges and technikons, the NGO sector and some subject organisations and educators have been responsible for an array of innovative INSET programmes, many of which involved professional development and educator empowerment. There is a need for an evaluation of these INSET practices and the role of the Department of Education in the formulation of a revitalised, properly accredited INSET policy.

It is recommended that such a policy be determined at a national level after obtaining concurrence with provincial education authorities and teacher organisations. By determining such a policy on a consultative and consensus basis, the national Department of Education should also ensure that financial provision for INSET is made.

Policy determined at national level can be more effective if it is considered within the national strategic framework of the Reconstruction and Development Programme (RDP 1994:7-11). If each of the nine provincial education authorities determine their own general INSET policy, problems can arise, especially for accreditation or priorities set by the RDP can be bypassed to satisfy less important needs. The possibility of different interpretations of INSET can also compound the problem for effective INSET for senior primary mathematics educators.

With regard to INSET, general guidelines are provided in the RDP discussion document (1994:7-8). The development of human resources is one of the five key programmes of the RDP. The RDP (1994:8) also emphasises life-long education. Guided by the broad principles, and the guidelines set by the RDP, the following is recommended as an overarching policy for INSET. The national Department of Education, in recognising that INSET is a major vehicle for human resource development, will take responsibility for the broad national policy development and financing of the service. Each provincial Department of Education will develop INSET policy, regulations and guidelines and manage the service within the broader policy for INSET.

6.4.2 INCENTIVES FOR THE INSET OF SENIOR PRIMARY MATHEMATICS EDUCATORS

Appropriate incentives need to be explored to increase participation rates in INSET programmes for senior primary mathematics educators. It is recommended that a functional model of INSET be developed by the Department of Education where courses including senior primary mathematics be recognised for salary increment and promotion purposes, after the completion of a pre-determined number of courses. Certificates should be issued to educators which would be of benefit to educators.

6.4.3 SCHOOL FOCUSED INSET FOR SENIOR PRIMARY MATHEMATICS EDUCATORS

For the effective provision of INSET, school focused INSET for senior primary mathematics educators should be established. Pather (1995:432) maintains that the most cost-effective structure that is appropriately located to effect change through INSET is the school.

Principals, Heads of Department and senior primary mathematics educators are valuable resources for establishing needs, serving as role models, peer group coaches and key linkages critical to the capacity building and developing of mathematics teaching. The principal and staff can undertake periodic whole school reviews and offer INSET on a developmental basis.

Bolam (1980:89) argues that the increasing attention paid to the role of the school in INSET has to a large extent arisen from dissatisfaction with traditional approaches to INSET. Individual educators attend these externally planned and provided courses and find it too theoretical or too general and are unable to implement its recommendations in their schools because of the particular circumstances that prevail in their schools. The response to this dissatisfaction, is the provision of school focused INSET, which is more directly focused upon the needs, tasks and problems of particular schools.

6.4.4 METHODS OF INSET COURSES FOR SENIOR PRIMARY MATHEMATICS EDUCATORS

The methods adopted for INSET courses for senior primary mathematics educators can determine the effectiveness of the INSET. INSET courses can take any one of a number of forms that vary from distant education to conferences. The duration of courses may also vary considerably and may be as short as a single session or sessions held over a month, term or year. Some of the methods that can be used are the following:

- Formal lectures: There are possibly two main types, one where the lecture is followed by questions from the participants and the other, where a group discussion follows the lecture.
- Group discussion or seminars: It is usual for these discussions to be led by specialists or experts in the field of mathematics. A series of discussions may be arranged frequently. It is desirable that the groups are small in order to facilitate discussion and the exchange of ideas.
- Working groups: The groups will consist of a few mathematics educators with the specific purpose of exploring topics related to the mathematics curriculum and classroom practices. The participants are involved in practical work and the experimentation of methods and materials. The word 'workshop' is commonly used to describe the activities of these working groups.

- Demonstration lessons: Senior primary mathematics educators are given the opportunity of observing and discussing demonstrations of mathematics lessons. Lessons may be recorded on video tape and discussed at INSET courses.
- Informal discussion meetings: This need not be used extensively. However, the aim is for the arrangement of informal meetings between senior primary mathematics educators from various schools where professional discussions are held.
- Tutorial instruction: Individual senior primary mathematics educators are visited in their schools. While this is the ideal one-to-one teaching situation, extensive use cannot be made of this time-consuming expensive method. It can, however, be used in follow-up work, where senior primary mathematics educators who have attended INSET courses are visited by other educators who attended the course or the course leader. This may be referred to as the working party approach.

All of the methods discussed emphasise a participative approach. It is recommended that these methods be explored. These methods will enable senior primary mathematics educators to highlight their problems and share ideas involving mathematics teaching thereby increasing the effectiveness of INSET for senior primary mathematics educators.

6.4.5 THE VALUE OF TEACHERS' CENTRES TO THE INSET OF SENIOR PRIMARY MATHEMATICS EDUCATORS

Teachers' centres can contribute to an improved INSET for senior primary mathematics educators. They act as exciting brokers for new ideas and as networks for personnel. These centres must be located at convenient points so that maximum use can be made of them. They should:

- provide the necessary venues for the varying methods of INSET for senior primary mathematics educators;

- provide up-to-date resources for the teaching of mathematics; and,
- publish articles and journals relevant to the teaching of mathematics.

This study has revealed that the senior primary mathematics educators in rural schools need the most amount of assistance. It is therefore recommended that there is an urgent need to establish teachers' centres in areas that will service these rural mathematics educators.

6.4.6 UPDATING OF SENIOR PRIMARY MATHEMATICS EDUCATORS

Pivotal to the INSET of senior primary mathematics educators is the need for these educators to update their in-depth knowledge of mathematics and the teaching of mathematics. The following recommendations will assist senior primary mathematics educators to update themselves:

- The purchasing of updated textbooks on both mathematical content and methodology for the school library.
- The reading of mathematics journals such as Pythagoras.
- Becoming members of mathematics committees and associations such as AMESA.
- Participating in workshops and seminars and submitting articles on the teaching of senior primary mathematics on a regular basis.
- Attending conferences, seminars, workshops and orientation courses organised for senior primary mathematics educators.

6.5 RECOMMENDATIONS FOR FURTHER RESEARCH IN THE INSET OF SENIOR PRIMARY MATHEMATICS EDUCATORS

As a critical constituent of the INSET of senior primary mathematics educators, further research in the teaching of senior primary mathematics should be undertaken. The following areas of study are suggested:

- An evaluation of the degree of supervisory support accepted by senior primary mathematics educators.
- An analysis of the resistance of senior primary mathematics educators to the uses of a variety of teaching strategies.
- The conceptions and beliefs that in-service senior primary mathematics educators hold about teaching and learning mathematics.
- Determine the nature and scope of Curriculum 2005 in the teaching of senior primary mathematics.

6.6 CONCLUSION

A holistic conclusion of the INSET of primary school mathematics educators would inevitably be that ultimately the task of INSET in its totality is to offer the primary school mathematics educators further guidance and keep them abreast with the developments in mathematics teaching. Furthermore, it will provide an opportunity to add to personal knowledge or skills already acquired in mathematics teaching, adopt to curricular changes, develop special knowledge of mathematics following initial training, find out more about ways in which learners learn mathematics and acquire guidance in learner evaluation. The INSET of primary school mathematics educators will extend their professional competence leading ultimately to a greater sense of confidence in mathematics teaching.

In this chapter the findings, recommendations and conclusion of the INSET of senior primary mathematics educators was outlined. It is hoped that consideration will be given to the recommendations made in this research so as to contribute positively to the INSET needs of primary school mathematics educators. Undoubtedly, these recommendations will constitute a challenge to primary school mathematics educators and educational authorities. However, all it will require is determination, vision, good planning and management.

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