CHAPTER FIVE

EMPIRICAL INVESTIGATION OF THE INSET OF EDUCATORS OF PRIMARY SCHOOL MATHEMATICS IN KWAZULU-NATAL

5.1 INTRODUCTION

In attempting to investigate the INSET of primary school mathematics educators in KZN, the researcher utilized the strategy of qualitative research methodology related to an empirical investigation to gather information. As there was no available instrument which could be applied to a sample of respondents representative of the senior primary mathematics educators in KZN, the researcher developed a questionnaire (See Appendix H) to elicit the necessary data relevant to INSET and primary school mathematics.

The descriptive survey method was used in this study as it uses the process of "observation" by means of a questionnaire followed by the systematic organisation and description of data. Furthermore, the questionnaire is viewed as an appropriate, economical and convenient data gathering device in research which can also be used to elicit responses from respondents at a distance. The questionnaire also caters for anonymity which ensures honest responses.

5.2 DEVELOPMENT OF THE QUESTIONNAIRE

A questionnaire was developed incorporating aspects of INSET and senior primary mathematics teaching gleaned from literature research as well as from the researcher's personal experience as a senior primary mathematics educator. In designing the questionnaire, cognisance was also taken of the process of implementation of the new curriculum (C2005) resulting in an increasing awareness for improved INSET.

5.3 CHOICE OF LOCALE

The study region comprised the eight regions in KZN (See Map on page 124). The study was restricted to schools under the control

of the KwaZulu-Natal Department of Education and Culture: KZN (KZNDEC).

5.4 STRUCTURE OF THE QUESTIONNAIRE

The questionnaire comprised sections A, B and C. Section A comprised personal particulars of respondents. These details form an integral part of this research as they affect special circumstances of educators such as:

- Mathematics educators, in particular (married females) have special requirements in terms of INSET course timing and attendance.
- Younger mathematics educators differ from experienced mathematics educators in terms of their INSET needs.

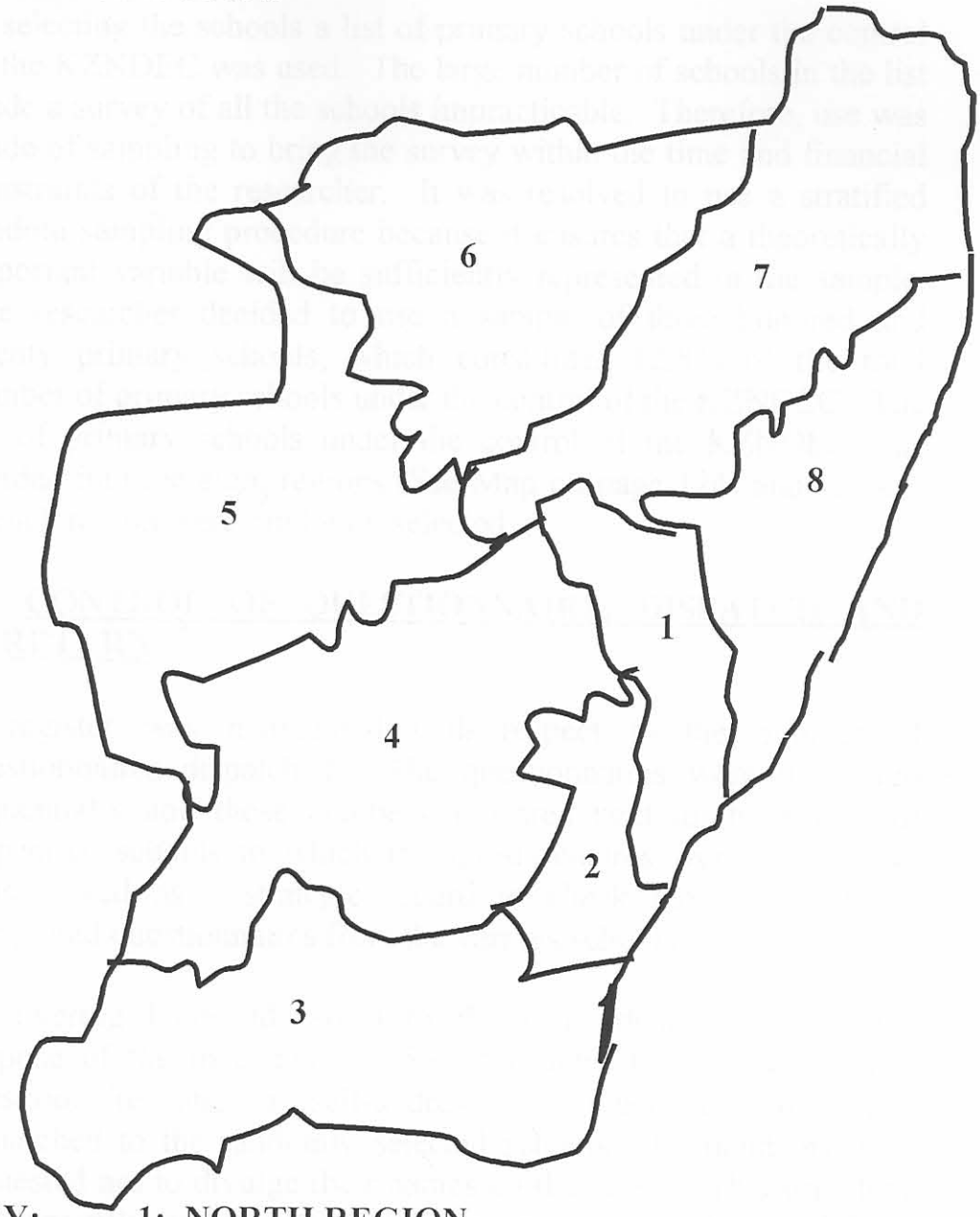
Section A involved questions which included such areas as gender of respondent, age, mathematics teaching experience and mathematics qualification.

Section B comprised questions pertaining to the respondent's school. These details were seen as vital in determining the level of school-based INSET. Questions ranged from location of school to supervision in mathematics teaching and mathematics committee meetings.

Section C comprised questions emphasising the nature, scope and needs for the INSET of senior primary mathematics educators. Questions included aspects such as the importance of INSET, reasons for INSET, attendance at INSET courses, relevance of INSET courses, timing of INSET courses and respondents teaching methods, use of aids and teaching strategies in mathematics.

A glossary of terms used in the questionnaire was included (See Appendix G). This was deemed as essential in assisting respondents in their interpretation of questions in which these terms were used. The telephone number of the researcher was also furnished in the questionnaire in the event of any queries.

MAP OF KWAZULU-NATAL SHOWING THE EIGHT KZNDEC REGIONS



KEY:
1: NORTH REGION
2: SOUTH REGION
3. PORT SHEPSTONE
4. PIETERMARITZBURG
5. LADYSMITH
6. VRYHEID
7. ULUNDI
8. EMPANGENI

5.5 SAMPLING PROCEDURE

In selecting the schools a list of primary schools under the control of the KZNDEC was used. The large number of schools in the list made a survey of all the schools impracticable. Therefore, use was made of sampling to bring the survey within the time and financial constraints of the researcher. It was resolved to use a stratified random sampling procedure because it ensures that a theoretically important variable will be sufficiently represented in the sample. The researcher decided to use a sample of three hundred and twenty primary schools, which constitutes 12,8% of the total number of primary schools under the control of the KZNDEC. The list of primary schools under the control of the KZNDEC was divided into the eight regions (See Map on page 124) and schools in each region were randomly selected.

5.6 CONTROL OF QUESTIONNAIRE, DISPATCH AND RETURN

A register was maintained with respect to the number of questionnaires dispatched. The questionnaires were numbered sequentially and these numbers appeared next to the names of respective schools to which the questionnaires were dispatched. This served as a strategic record to check the return of the completed questionnaires from the various schools.

A covering letter addressed to the respondent explaining the purpose of the investigation (See Appendix F), together with a questionnaire and a self-addressed stamped envelope was dispatched to the randomly selected schools. Respondents were requested not to divulge their names on the return. This was done as anonymity will ensure honest responses. Schools that did not return questionnaires timeously were contacted telephonically to expedite the return of completed questionnaires. Table 5.1 on page 126 indicates the response rate to questionnaires.

Table 5.1 Response rate to questionnaires

Institutions	No. Dispatched	No. Returned	Percentage Returned
Random sample of primary schools under the control of the KZNDEC	320	237	74%

Understandably, all the questionnaires dispatched to schools were not completed and returned assumably for numerous reasons. The return constituted a 74% response. Bagwandeen (1991:489) points out in referring to Ary *et al.* (1972:171) and Govender (1990:66) that a percentage of 70% returns of questionnaires is sufficient to validate research findings. The 74% return from respondents therefore, is enough to validate the findings of this investigation.

5.7 ANALYSIS AND INTERPRETATION OF DATA

The necessary information from the questionnaires was extracted. Thereafter, the researcher requested the expertise of K.Govender, a computer programmer, to prepare a special programme to analyse the data. In the analysis process the data was subjected to frequency distributions and tabulation statistical analysis.

5.7.1 PERSONAL PARTICULARS OF RESPONDENTS

5.7.1.1 GENDER OF RESPONDENTS (Q.1)

Table 5.2 Gender of respondents

GENDER	FREQUENCY	PERCENTAGE
MALES	78	32,9
FEMALES	159	67,1
	N = 237	100

Figure 5.1 Gender of senior primary mathematics educators

The bar graph below shows the distribution of senior primary mathematics educators in KZN according to gender.

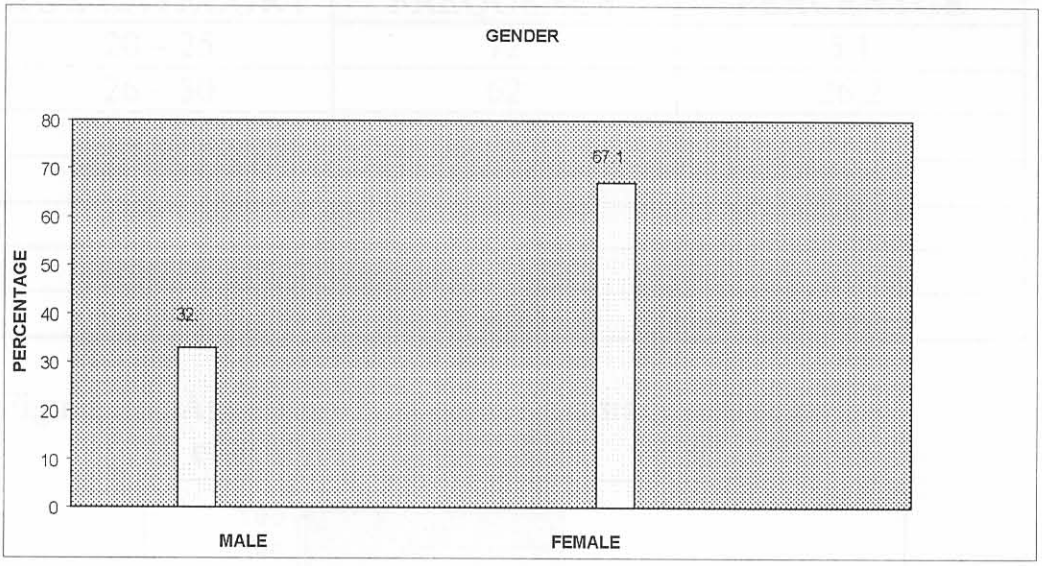


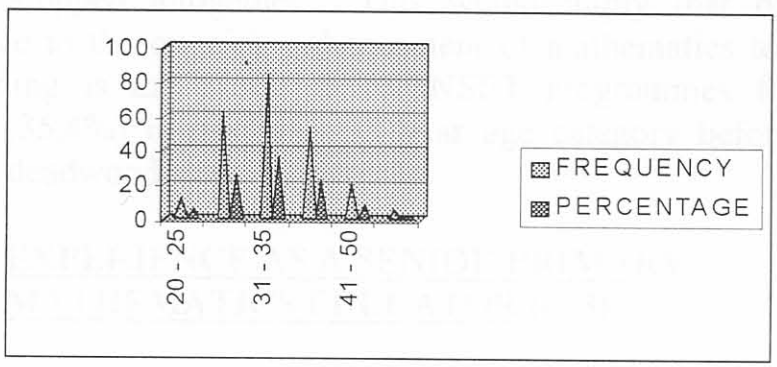
Figure 5.1 reveals that the majority (67,1%) of the respondents are females. Family obligations will affect the participation of educators, particularly in the case of married females, in the various INSET programmes provided for senior primary mathematics educators. Although this research did not specifically question the marital status of the respondents, drawing from the researcher's personal experiences, it can be safely assumed from comments made by married female mathematics educators at courses offered by the KZNDEC that attendance at these courses constitute an added burden. This would imply that planners of INSET courses for senior primary mathematics educators must ensure that the courses are well structured and organised so that they are not viewed as a waste of valuable time. In addition, INSET providers should also consider providing creche facilities to ensure the effective participation of educators accompanied by children at INSET courses after school hours.

5.7.1.2 AGE OF RESPONDENTS (Q.2)

Table 5.3 Age category of senior primary mathematics educators

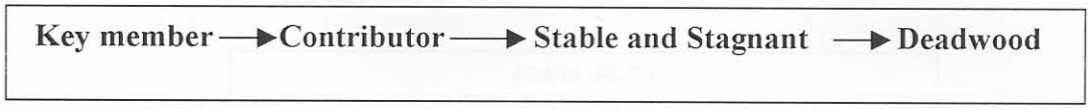
AGE CATEGORY	FREQUENCY	PERCENTGE
20 – 25	12	5,1
26 – 30	62	26,2
31 – 35	84	35,4
36 – 40	53	22,3
41 – 50	21	8,9
Over 50	5	2,1
	N = 237	100

Figure 5.2 Age category of senior primary mathematics educators



The majority (35,4%) of the senior primary mathematics educators are in the age category of 31 – 35 years. In this regard, the researcher concurs with Pather (1995:422) referring to Evans (1989:10-15) that mid-career professionals may be prone to demotivation (boredom, loss of enthusiasm, diminished job interest) and levelling of performance. This can be exacerbated by stress created by changing family composition, pre-occupation with personal and family concerns, loss of the experience of success and growing isolation (Pather, 1995:422). The researcher firmly believes that this can be assumably applicable to the 31 – 35 year old senior primary mathematics educators in KZN.

Figure 5.3 Continuum of mid-career types



Source: Pather, 1995:423

Pather (1995:423) explains this continuum of mid-career types as: at one end of the continuum are key members, educators who are engaged in self-renewal activities and who sustain both their enthusiasm and performance at exceptional levels. Contributors constitute the second group of educators who are solid, reliable participants in INSET programmes.

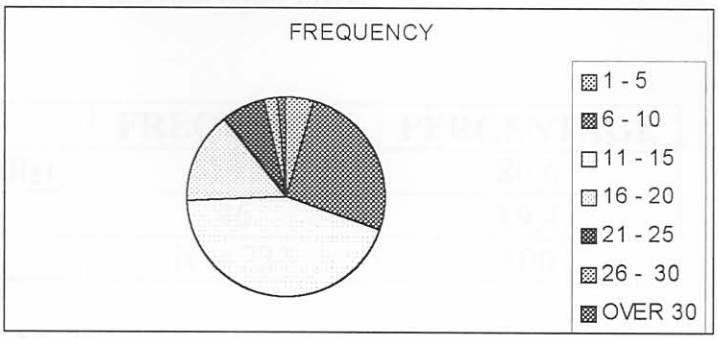
In contrast to the key members and contributors are the stable and stagnant and the deadwood. These educators' professional growth possibly stopped altogether. This would imply that of vital importance to the ongoing enhancement of mathematics teaching and learning is the provision of INSET programmes for this majority (35,4%) in the 31 – 35 year age category before they reach the deadwood stage.

5.7.1.3 EXPERIENCE AS A SENIOR PRIMARY MATHEMATICS EDUCATOR (Q.3)

Table 5.4 Experience as a senior primary mathematics educator

Experience in years	Frequency	Percentage
1 – 5	11	4,6
6 – 10	61	25,7
11 – 15	104	43,9
16 –20	35	14,8
21 – 25	18	7,6
26 – 30	5	2,1
Over 30	3	1,3
	N = 237	100

Figure 5.4 Experience as a senior primary mathematics educator



With respect to senior primary mathematics educators with 1 to 5 years' experience (4,6%), INSET providers must realise that positive attitudes to life-long learning and the need to update oneself through INSET should be developed and entrenched in the first few years of teaching. If this is promoted efficiently mathematics educators will not have to rely on knowledge and training gained in the PRESET period. In this context the KZNDEC needs to develop a policy framework which links PRESET and INSET in a continuum of teacher development. The development of such a policy will undoubtedly result in improved mathematics teaching and learning.

The survey also reveals that the bulk of the senior primary mathematics educators have 6 to 20 years of teaching experience (84,4%). Opportunities must be provided to assist these educators to reflect on their teaching experiences and more importantly to integrate their teaching experiences with updated knowledge of changes in mathematics teaching and learning.

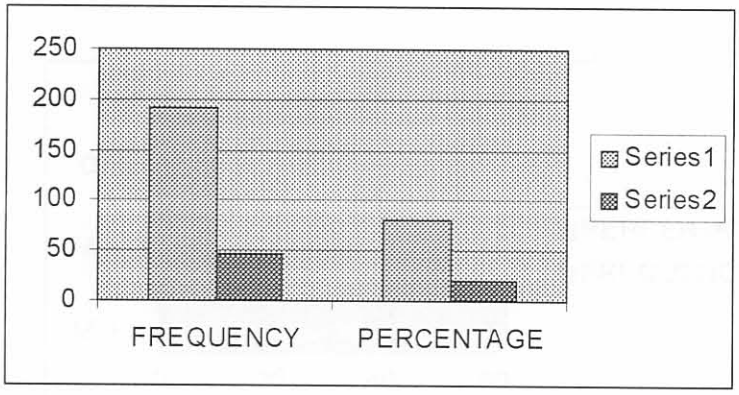
The decrease in the number of educators with teaching experience over 26 years (3,4%) could be attributed to the large number of educators in this category that have accepted the severance package. INSET providers could utilize these educators to share their wealth of expertise in INSET courses planned for senior primary mathematics educators.

5.7.1.4 SPECIALISATION IN MATHEMATICS (Q.4)

Table 5.5 Mathematics Specialist

	FREQUENCY	PERCENTAGE
Non-Specialist	191	80,6
Specialist	46	19,4
	N = 237	100

Figure 5.5 Mathematics Specialist



Statistics in Table 5.5 indicate that 191 (80,6%) of the senior primary mathematics educators are non-specialist. This would imply that the KZNDEC needs to see INSET courses or programmes as a priority for the improvement of the delivery of quality mathematics teaching in the senior primary phase. The KZNDEC could also provide an incentive in the form of salary increments for educators to undergo formal upgrading of their qualifications in mathematics so as to ultimately reach a level of specialisation in senior primary mathematics.

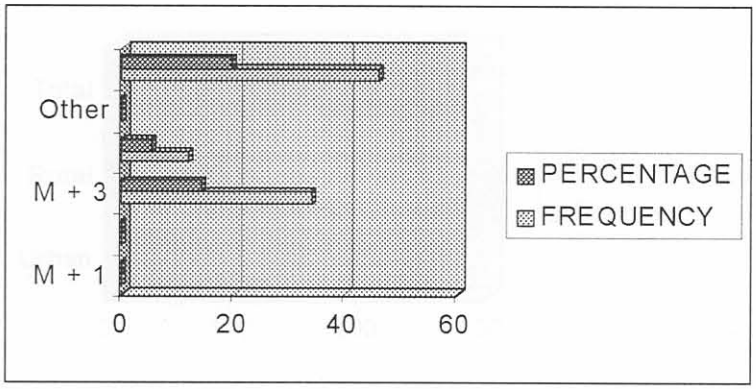
5.7.1.5 QUALIFICATIONS IN MATHEMATICS AS SPECIALISATION (Q.5)

The 19,4% specialists in mathematics had the following qualifications:

Table 5.6 Qualifications in mathematics as specialisation

QUALIFICATION	FREQUENCY	PERCENTAGE
M + 1	0	0
M + 2	0	0
M + 3	34	14,3
M + 4	12	5,1
OTHER	0	0
TOTAL	46	19,4

Figure 5.6 Qualifications in mathematics as specialisation



Prior to 1994 the Education Departments concentrated on the upgrading of unqualified or under-qualified educators. Upon completion of a diploma, degree or courses, educators were re-graded resulting in a salary increment. It could be assumed that this policy may have served as an incentive for some educators to upgrade their qualifications while others may have upgraded their qualifications because of their dedication and commitment to the profession.

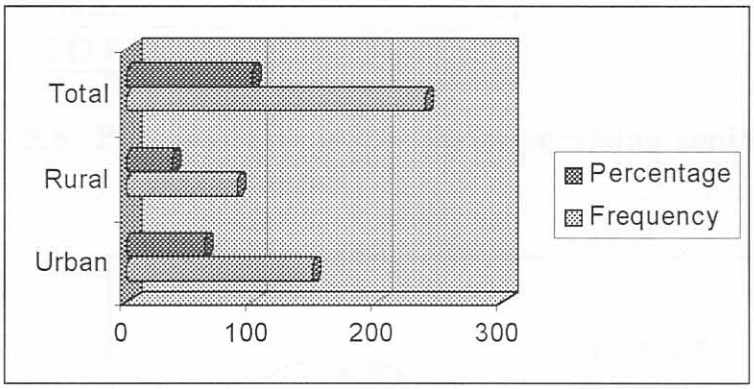
Since the policy of re-grading has ceased many educators may require intrinsic incentives in the form of salary increments or enhanced eligibility for promotion to upgrade their qualification. The KZNDEC needs to seriously consider providing mathematics educators with these incentives to undergo formal upgrading of their qualification resulting in an enhanced mathematics teaching and learning environment.

5.7.1.6 LOCATION OF RESPONDENT'S SCHOOL (Q.6)

Table 5.7 Location of respondent's school

Location of School	Frequency	Percentage
Urban	149	62,9
Rural	88	37,1
Total	237	100

Figure 5.7 Location of respondent's school



Problems associated with transportation, long distances and costs incurred may discourage participation of senior primary mathematics educators from rural schools (37,1%) in INSET courses or programmes. The KZNDEC needs to consider linking up with NGOs and other consultants involved in outreach programmes designed to offer INSET to senior primary mathematics educators outside the urban areas. The KZNDEC could also provide incentives in the form of salary increments and promotion opportunities to specialised mathematics educators in the urban areas to enable them to relocate to rural schools. Their expertise in the rural schools will undoubtedly enhance the mathematics teaching and learning in the rural areas.

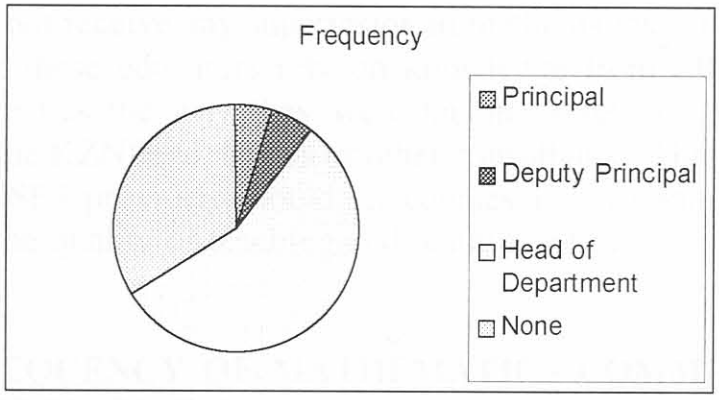
5.7.2 SCHOOL FOCUSED INSET

5.7.2.1 PERSONS RESPONSIBLE FOR SUPERVISING MATHEMATICS IN THE SENIOR PRIMARY PHASE IN SCHOOLS (Q.7)

Table 5.8 Persons responsible for supervising senior primary mathematics

Person Responsible	Frequency	Percentage
Principal	12	5,0
Deputy Principal	13	5,5
Head of Department	131	55,3
None	81	34,2
TOTAL	237	100

Figure 5.8 Persons responsible for supervising senior primary mathematics



The purpose of supervision is an interactive process that promotes professional growth through co-operation and reciprocal relationships between the senior primary mathematics educator and the person supervising mathematics. An examination of the statistics reveal that 156 (65,8%) senior primary mathematics educators receive supervision in mathematics from respective members of management. Of critical importance to the effective supervision of mathematics in the senior primary phase are the following:

- Members of management attending mathematics orientation courses, workshops and seminars on a regular basis to update their knowledge on the supervision of mathematics.

- Members of management holding meetings and discussion session with mathematics educators in the school on a regular basis.

- Members of management playing a central role as researcher, innovator and developer so that they can contribute to the improvement of mathematics teaching and learning.

- Members of management organising school focused INSET projects in mathematics.

- Members of management networking with other school's management staff.

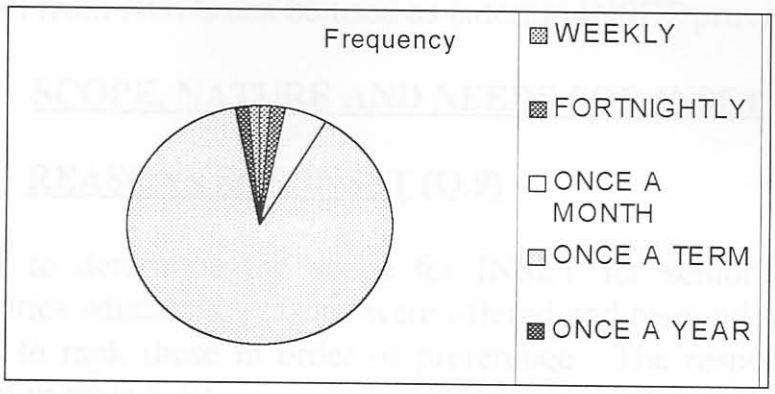
Statistics in table 5.8 also indicate that 81 (34,2%) mathematics educators do not receive any supervision in mathematics. It can be assumed that these educators rely on knowledge from PRESET, teach mathematics the way they were taught or rely on INSET provided by the KZNDEC, NGOs or other consultants. This would imply that INSET providers should see courses and programmes as a priority if the quality of teaching and learning of mathematics is to improve.

5.7.2.2 FREQUENCY OF MATHEMATICS COMMITTEE MEETINGS (Q.8)

Table 5.9 Frequency of mathematics committee meetings

Options	Frequency	Percentage
Weekly	3	1,3
Fortnightly	5	2,1
Once a Month	12	5,1
Once a Term	210	88,6
Once a Year	4	1,6
Not at All	3	1,3
TOTAL	237	100

Figure 5.9 Frequency of mathematics committee meetings



Majority (98,7%) of the respondents indicated that mathematics committee meetings are conducted at their schools. The possible reason may be that the general feeling is that mathematics is an important subject and needs to be discussed at intervals.

These mathematics committee meetings provide an opportunity for the senior primary mathematics educators to discuss and determine a major part of their collective INSET needs on an ongoing basis within the context of their institution. This strengthens the concept of life-long learning and will ultimately lead to the improvement of the quality of mathematics teaching and learning. In planning activities in response to the changing needs of mathematics, a sense of ownership by the senior primary mathematics educators is encouraged. Such ownership ensures the success of INSET and will also contribute to greater commitment to INSET by senior primary mathematics educators.

The researcher acknowledges that senior primary mathematics educators attending INSET courses and programmes organised by the KZNDEC come from different school environments and experiences. In this context, these educators will require further support at schools to ensure that the programmes they participated in are successful. It is at these committee meetings that, jointly, mathematics educators may integrate innovations into the existing school programmes.

Though these committee meetings depend on the school's human resources, there is a need to acknowledge the importance of

external assistance. Subject Advisors of primary school mathematics, consultants such as lecturers from universities or personnel from NGOs can be used as external INSET providers.

5.7.3 SCOPE, NATURE AND NEEDS FOR INSET

5.7.3.1 REASONS FOR INSET (Q.9)

In order to determine the scope for INSET for senior primary mathematics educators, reasons were offered and respondents were required to rank these in order of preference. The responses are indicated in table 5.10.

Table 5.10 Rank order of preference of reasons for INSET for senior primary mathematics educators

REASONS FOR INSET	FREQUENCY PRIORITY				TOTAL
	1	2	3	4	
For self-empowerment in mathematics through networking with colleagues teaching senior primary mathematics	228	9	0	0	**237**
Improve competency as a senior primary mathematics educator so that learners will perform better academically	201	20	16	0	**237**
Need to be away from the daily routines of school	0	0	0	237	**237**
Update knowledge of recent trends and changes in senior primary mathematics	235	2	0	0	**237**

Key: 1 indicates the highest priority
4 indicates the lowest priority

Senior primary mathematics educators do not consider the need to be away from the daily routines of school as a priority for INSET as 0% ranked this reason as being first. Noteworthy on the other hand are the other reasons ranked as first which clearly indicate a general agreement by senior primary mathematics educators on the primary aims of INSET activities.

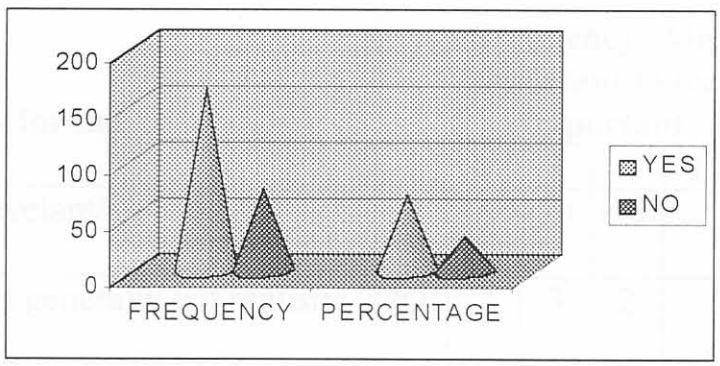
The survey also reveals that the senior primary mathematics educators acknowledge that the very nature of teaching demands commitment, keeping abreast of developments, improving one's skills and competencies, maintaining a high professional standing and providing quality education. More importantly, is the realisation that central to the nature of teaching demands is the recognition of the need for personal response and involvement in INSET.

5.7.3.2 ATTENDANCE AT INSET COURSES, SEMINARS, WORKSHOPS FOR SENIOR PRIMARY MATHEMATICS EDUCATORS AT CIRCUIT/DISTRICT LEVEL (Q.10)

Table 5.11 Table summarising the respondents attendance at INSET courses, seminars or workshops

	Frequency	Percentage
YES	163	68,8
NO	74	31,2

Figure 5.10 Respondents' attendance at INSET seminars, workshops and courses



This survey indicates that 163 (68,8%) mathematics educators attended INSET courses, workshops and seminars which implies the majority realise the importance of INSET courses in the enhancing of mathematics teaching and learning. It may also be assumed that while many senior primary mathematics educators attend INSET courses, workshops and seminars because of their dedication and commitment to the profession, others may require

motivation in the form of certificates of attendance. Furthermore, these certificates should be recognised for service awards or eligibility for promotion. Senior primary educators should also be allowed to accumulate credits through attendance at INSET courses. These credits could be linked to salary increments. These incentives may appeal to educators and motivate them to attend INSET courses. In addition, senior primary mathematics educators whose salaries are low could be motivated to attend INSET courses at venues which are a distance from their schools if the KZNDEC pays them a travel and subsistence allowance.

5.7.3.3 REASONS FOR NON-ATTENDANCE AT INSET COURSES, WORKSHOPS AND SEMINARS (Q.11)

In order to determine the possible reasons as to why 74 (31,2%) senior primary mathematics educators did not attend INSET courses, workshops and seminars, reasons were offered and respondents were required to rank these in order of preference. The responses are indicated in table 5.12.

Table 5.12 Rank order of preference of reasons for not attending INSET courses, workshops and seminars and workshops

Reasons for non-attendance	Frequency: Most important to least important				
	1	2	3	4	TOTAL
INSET irrevelant/unnecssary	2	6	10	56	74
Approaches generally not realistic	62	7	3	2	74
Other commitments precluded participation	4	6	5	59	74
Travelling/venues posed a major problem	54	12	6	2	74

KEY: 1 indicates the highest priority
2 indicates the lowest priority

Approaches generally not realistic at INSET courses offered for senior primary mathematics educators constituted a major problem for the 74 (31,2%) educators. The researcher acknowledges that the conditions, facilities, resources, qualifications and experiences of educators participating in INSET programmes varies from school to school. However, in curriculum-related courses in which Education Department officials explain syllabus changes, teaching methods and organisational changes in the school and even when a common problem is addressed, inadequate account is taken of the different school contexts. Course leaders are often accused of being unaware of the realities in the classroom. Hence, they do not provide strategies that are relevant and potentially effective in the classroom. This would suggest that the KZNDEC in developing an infrastructure for INSET for senior primary mathematics educators, provision should be made for the utilization of educators, college and university lecturers and other educationists as consultants. Mathematics educators would benefit from the varied experience of experts.

Some educators who have excelled in the classroom using innovative and successful teaching methods can serve as INSET course leaders. Others who have tested teaching methods through action research can also individually or as team members offer INSET. This would have the following implications for senior primary mathematics educators:

- They can learn from colleagues job-related and job-embedded skills and practices.

- Educators as course leaders with necessary expertise remain aware of realities in the classroom. They will take into account the different school contexts from which educators come.

- Potentially effective and relevant strategies would be provided which could successfully be applied in the classroom thus increasing the confidence of the mathematics educator.

- Follow-up would be possible, as the educators with the necessary expertise will be easily available.

Travelling to INSET venues also posed a problem for the 74 (31,2%) educators. Organisers of INSET courses must ensure that venues are selected which will cause the least amount of inconvenience in respect of travelling distance.

Other reasons postulated and responses speak for themselves and need no further elaboration. It is suggested that educational authorities regard these responses as challenges to develop an infrastructure that would motivate all senior primary mathematics educators to attend INSET courses.

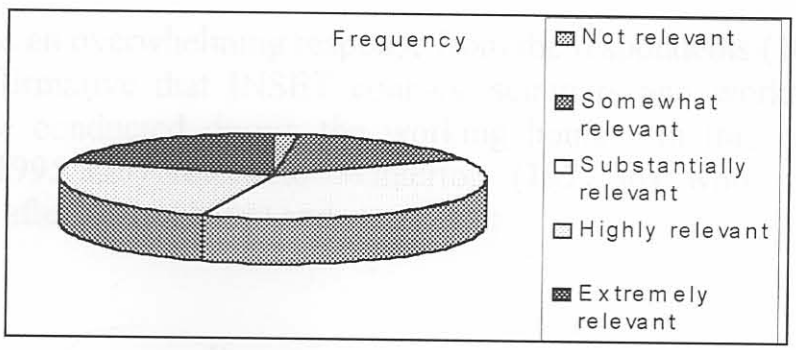
5.7.3.4 RELEVANCE OF INSET COURSES, SEMINARS AND WORKSHOPS ATTENDED (Q.12)

In order to determine the contributions of INSET to the needs of educators the 163 (68,8%) of the senior primary mathematics educators rated the INSET courses, seminars, workshops attended.

Table 5.13 Rate of relevance of INSET courses, seminars and workshops attended

Rate of Relevance	Frequency	Percentage
Not relevant	3	1,3
Somewhat relevant	25	10,5
Substantially relevant	62	26,2
Highly relevant	40	16,9
Extremely relevant	33	13,9
TOTAL	163	68,8

Figure 5.11 Rate of relevance of INSET courses, seminars and workshops attended



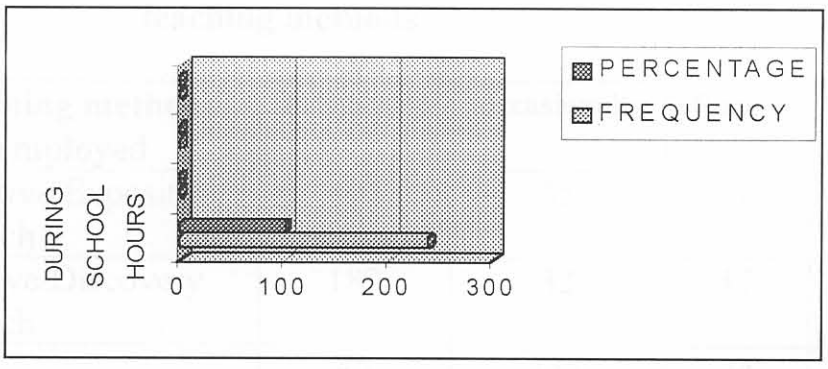
Only 1,3% of the respondents considered INSET courses, seminars and workshops for senior primary mathematics educators as not relevant, while 10,5% considered them somewhat relevant, 26,2% substantially relevant, 16,9% highly relevant and 13,9% extremely relevant. Thus, it is apparent that courses, seminars and workshops are considered important by the majority of respondents as they contribute positively to the INSET needs of those attending them.

5.7.3.5 TIME WHEN INSET COURSES, SEMINARS AND WORKSHOPS SHOULD BE CONDUCTED (Q.13)

Table 5.14 Time when INSET courses, seminars and workshops should be conducted

TIME	FREQUENCY	PERCENTAGE
During school hours	237	100
After school hours	0	0
During school vacations	0	0
During weekends	0	0
TOTAL	237	100

Figure 5.12 Time when INSET courses, seminars and workshops should be conducted



There was an overwhelming response from the respondents (100%) in the affirmative that INSET courses, seminars and workshops should be conducted during the working hours. In this regard Pather (1995:356) refers to Winterton (1977:36) who rejects activities after school hours and states that:

'If we are really serious about our quest for quality education then we must get serious about designing opportunities for teacher growth into the educational day.'

Furthermore, Pather (1995:356) equates the willingness to provide time for INSET to the importance that is attached to quality teaching. In analysing the problem of release time of senior primary mathematics educators during school hours for INSET activities the researcher is of the firm belief that this can become reality if the KZNDEC adheres to the following:

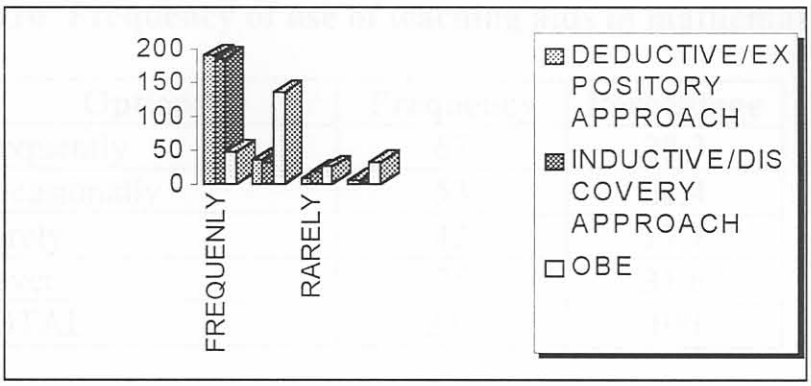
- Five days are added to the school calendar for INSET activities. On these days learners do not attend school.
- The provision of substitute educators in the event of senior primary mathematics educators attending INSET activities during school hours.

5.7.3.6 TEACHING METHODS USED BY SENIOR PRIMARY MATHEMATICS EDUCATORS (Q.14)

Table 5.15 Frequency distribution table of mathematics teaching methods

Teaching methods employed	Frequently	Occasionally	Rarely	Never
Deductive/Expository approach	191	35	6	5
Inductive/Discovery approach	187	32	17	1
OBE	45	137	24	31

Figure 5.13 Teaching methods used by senior primary mathematics educators



The above reflects that the expository or deductive method and inductive or discovery methods are frequently used by majority of the educators while the OBE approach is occasionally used. The following reasons could be given for this:

- Educators feel more comfortable using the deductive and inductive methods because they have been tried and tested over the years and educators have mastered these approaches.

- Educators feel less adequate to use the OBE method because of lack of knowledge of the method, lack of resources to use the method or the method has not been phased in at their schools.

- The OBE method may not be suitable for the mixed ability groups or large numbers in their classes.

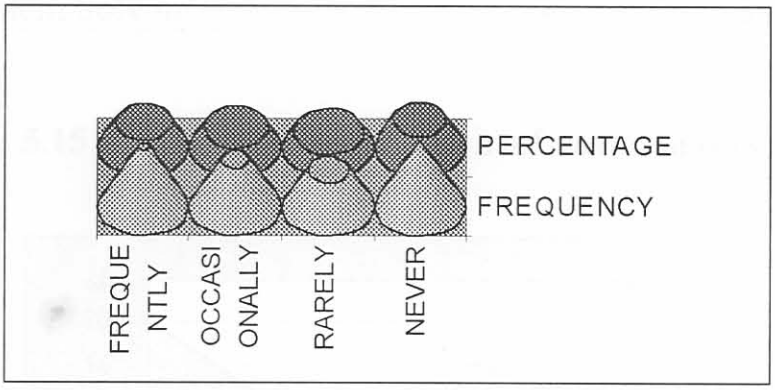
Curriculum reform aimed at altering teaching methods, are reliant on educators having high quality learning opportunities to make sense of it. Having been trained in a particular way and having internalised and routinised a particular approach to teaching over a number of years, educators experience uncertainty, apprehension, ambivalence and inertia. This provides strong evidence that INSET should be used as a vehicle to introduce curriculum reform aimed at altering senior primary mathematics educators teaching methods.

5.7.3.7 USE OF TEACHING AIDS IN MATHEMATICS (Q.15)

Table 5.16 Frequency of use of teaching aids in mathematics

Options	Frequency	Percentage
Frequently	67	28,3
Occasionally	53	22,4
Rarely	42	17,7
Never	75	31,6
TOTAL	237	100

Figure 5.14 Frequency of use of teaching aids in mathematics



The majority of educators, namely, 75 (31,6%), indicated that they never used teaching aids when teaching mathematics. This could be due to:

- Educators' 'misconceptions' that mathematics teaching does not warrant the use of teaching aids.
- Accessibility of teaching aids is difficult.
- Time constraints do not permit the use of teaching aids. Educators believe that they have limited time to teach many mathematical concepts.

Teaching aids enhance mathematics lessons. Hence, mathematics educators need to use a variety of teaching aids. Where there is an absence of electricity educators can use charts, pictures, posters,

work-books in their lessons. Furthermore, where accessibility is a problem, educators should link up with other schools where teaching aids are accessible.

5.7.3.7 TEACHING STRATEGIES USED BY SENIOR PRIMARY MATHEMATICS EDUCATORS (Q.16)

Table 5.17 Frequency distribution table of mathematics teaching strategies

Teaching Strategy Employed	Frequency	Percentage
Chalk and Talk	203	85,7
Games	78	32,9
Group Work	155	65,4
Problem Solving	91	38,4

Figure 5.15 Frequency distribution of mathematics teaching strategies

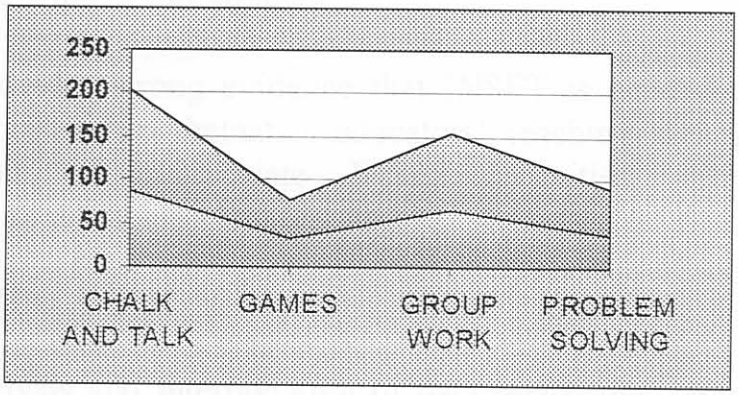


Table 5.17 reflects the range of strategies used by the senior primary mathematics educators. Strategies such as chalk and talk and group work are used by educators in both rural and urban schools. However, problem solving seemed to be used more in urban rather than rural schools. This could be due to the following:

- Educators use the chalk and talk strategy frequently because they feel adequate with this strategy. They remain in control while learners continue to be passive. Least disturbances occur in the class and the educator can cover adequate subject matter.

Since educators are so comfortable with this strategy they become resistant to change.

- Educators that do use the groupwork strategy feel that it leads to effective mathematics teaching since the numbers in classes are too large.

- Educators that do not use the groupwork strategy attribute it to the noise factor. These educators believe that learners cannot work quietly in groups. This could also be attributed to the 'misconception' that learning only takes place when learners are quiet.

- Educators, especially in the rural areas feel threatened to use the problem solving strategy because they feel inadequate in problem solving skills.

- Educators in rural areas also shy away from the use of games in mathematics teaching, which could be due to their lack of knowledge of this strategy.

This provides strong evidence that INSET is needed to develop senior primary mathematics educators' teaching strategies. The provision of appropriate INSET activities will enhance mathematics teaching and learning.

5.8 CONCLUSION

The analysis and interpretation of data reveal that senior primary mathematics educators realise the importance of keeping abreast with the development of mathematics and acknowledge the need for INSET. What is of concern is the level and scale of provision of INSET for senior primary mathematics educators. This survey has identified and highlighted areas that could provide pointers for future INSET provision. The key role players in the KZNDEC ought to look into these pointers if the quality of mathematics teaching and learning is to be improved in the senior primary phase in schools.

Conclusions arising from the study of INSET of primary school mathematics educators with reference to KZN and recommendations are discussed in the next chapter. This could also be considered as points of departure for further research and investigation.