PERCEPTIONS OF 3rd YEAR STUDENT TEACHERS AT THE CAPRIVI COLLEGE OF EDUCATION AS TO WHAT CONSTITUTES GROUP WORK

By

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This work, I dedicate to the memory of my late mother, Mrs. Ramatu Liman whose undying love and affection for all her children took us to where we are today.

Last but by no means least, to my father who started us off , I say thank you father.

TABLE OF CONTENTS

List of tables

List of Appendices

Abstract

This study aims to find out what the perceptions of 3rd year Mathematics and Science student's teachers of the Caprivi College of Education are as regards group work.
The study was conducted at the Caprivi College of Education, in Namibia.

The research methodology draws heavily from the approach employed by both of Bennet, J. et al, (2001), Hewson and Hewson, (1989) and Penlington and Stoker, (1998).
Thirty two student teachers in their first year of study as well as sixteen 3rd year student teachers were initially requested to respond to a free response questionnaire that contained twenty items. The responses from this questionnaire were used to generate areas of concern that the respondents found important (statements that were regularly emphasised by the respondents).
These statements then formed the basis of the classroom group work related scenarios that were finally generated to test, in an interview setting, the perceptions of these student teachers.

Six student teachers in the 3rd year were selected by purposive sampling to take part in the semi structured interview. Three of them were males and the other three were females. The interviews were transcribed and the responses (perceptions) were tabulated. These perceptions were then compared with the responses that were obtained via the validation process as well as proven theories of group work practices.
The results from the interviews then formed the major areas of discussion of the results. The results amongst others showed that the perceptions that the majority of the student teachers' hold as

regards various aspects considered important in group work, were in line with current international literature findings, as well as work done in this area in Namibia, Swarts (1999).

Chapter One

THE PROBLEM

1.1 Introduction

In my eight years as a teacher educator, both in Nigeria and most recently in the Caprivi College of Education, in the Republic of Namibia, I have come to realise that even with the advent of the learner-centred pedagogy, practising teacher educators, student teachers and even practising teachers in the primary and secondary schools, always grapple with implementing strategies that effectively promote a learner-centred approach to teaching. One of the commonly used strategies utilised in learner-centred pedagogy is group work. But why do we need our learners to work in groups? The reason for using group work can become clear if we consider the statement given by Yeomans (1987) when he said:

> 'I was sitting in a room with 30 others. Few people had spoken, …..I nearly hadn't bothered to come to the class. Several weekly sessions of this large group experience left me feeling isolated, powerless, insecure, uncooperative and hostile to those I blamed for my feelings….. Large group experience contrasted vividly with the small group experience later in the week…. The group of ten differed from the large group in size and configuration but not organisation or structure. Both groups had a responsible person as a non-directing leader….but the ten were sitting in a circle and able to see each other….(this) led progressively to extensive talk, openness, supportiveness, warmth, cohesive interdependence and a sense of common purpose.'

But why do we need our learners to work in groups?

As long ago as 1897, Triplett (1897), involved youngsters in a fairly simple task: that of reeling in a fishing line. He found that an individual's speed at the task improved every time he or she worked together with someone else. There was no notion, at this point of pairing the youngsters on grounds of skills in fishing or friendship, it was simply the presence and

cooperation of another youngster which improved the performance.

Further studies of such 'co-action' have taken place since 1897 over a variety of tasks and on the whole the findings have been similar; the mere presence of others cooperating in a task can act to increase the speed at which the tasks are done. In other words, even just the act of putting two individuals together on the same task, with no thought of careful matching of task or people, can enhance learning. This is not to say that the matching process is not an important part of group work.

Kagan, (1992) suggests that how a person behaves depends to a great extent on the situation they are in. In his elaboration of this statement, that is, the driving force of his theory of cooperative learning structures, he considered learning in two scenarios:

Two rich women enter two classrooms with a giant basket full of gold coins. In each classroom the women toss the coins all over the classroom.

In the first classroom the learners were told to collect as many coins as they can in two minutes and they should all put the coins they have collected back in the basket. The collected coins will then be shared amongst all learners in that classroom.

In the second classroom, the learners were told to each pick as many coins as they can in two minutes and whatever coins they picked are theirs and they do not have to share them with others.

The result was that the learners in the first classroom by cooperating, collected more coins than the second classroom where the learners competed for the coins!

The Republic of Namibia only got independence in 1990, and a lot has changed in terms of the way teaching and learning is

practised. The major change is outlined in the Ministry of Education (MEC) position paper Towards Education for All, which states:

> 'as we make the transition from educating an elite to education for all, we are also making another shift, from a teacher-centred to the learner-centred education...' (MEC. 1993:10)

The structure of the Namibian educational system has not changed much even after independence in 1990. What has undergone change is the educational ideology. The educational system comprises of three phases: the primary phase which is from grades 1 to grade 7; the Junior secondary phase which is from grades 8 to 10 and finally the senior secondary phase which runs from grades 11 to 12.

While the primary phase is usually catered for exclusively in primary schools, the junior secondary phase as well as the senior secondary phase used to be catered for under the same schools (secondary schools). In some cases, however, there are what are referred to as combined schools which cater for both the primary phase as well as the junior secondary phase i.e. from grades 1 to 10.

Recently, however, with the reform process, some secondary schools have been broken into senior secondary and junior secondary. In such situations, the senior secondary schools cater for learners from grades 11 to 12, while the junior secondary schools cater for learners from grades 8 to 10.

Prior to independence the educational curriculum used to be that of the Cape Education system and students in both grades 10 and grade 12 wrote the Cape Examination. With the coming of reform in 1993, the system changed. The grade 10 examinations became the responsibility of the National Examinations Board under the Ministry of Basic Education,

while the grade 12 examination came under the Cambridge Examination system, (Towards Education for All, 1993).

At the completion of grade 12, students had the option of either going to the Academy (now the University of Namibia) which offered diplomas and certificates. Alternatively the students could attend one of the four teacher training colleges as they were then called to do a teacher certificate programme, or they could also gain admission into any of the four agricultural colleges.

The history of teacher education in Namibia started in 1805, when the first teacher training college was opened at Warmbad. Other teacher training centres that followed were at Betanie in 1813 and Otjimbingwe in 1866. All these teacher training centres were set up to cultivate the missionary mission, which is to preach and teach and therefore they all emphasised Bible knowledge as well as the rudiments of numeracy and literacy, (Avenstrup R, 1997).

The Finnish missionaries established the first teacher training centre in the north in 1913 at Oniipa and in 1979 they added another one at Ongwediva also in the north. With the opening of the Academy in Windhoek in 1980, new teacher training programmes were introduced such as the higher education diploma (HED) and various B.Ed. In addition, the University of Namibia provided teacher certificate course at the other teacher training centres in Rundu, Katima Mulilo, Windhoek and Ongwediva. These certificate courses include the two year National Education Certificate (NEC) and the National Higher Education Certificate (NHEC).
All of these training centres trained teachers for teaching in primary schools and issued certificates.

Meanwhile the South West African People's Organisation (SWAPO) in exile also had their own teacher training programme at the United Nations Institute for Namibia (UNIN) in Lusaka, Zambia, as well as the Integrated Teacher Training Project (ITTP) which was supported by the University of Umea in Sweden and based at Kwanza Zul in Angola.

Prior to independence, Namibia's teacher education programme has tended to sway mainly towards the acquisition of academic knowledge, with little or no regard for the professional development of the student teacher. According to Dahlstrom (1999):

> 'pre-independence pedagogy was effected mainly through study guides comprising articles from different sources bound together under an Academy'

This trend continued until independence when the new government decided to introduce a radical reform programme that was supposed to address the inequities of the past. This reform process was anchored on the following aims:

1. access
2. equity
3. quality
4. democracy

The government of post independent Namibia, having just come out from a long drawn out war of independence, whose aim was to see democracy entrenched in the Republic of Namibia, made it a point that the Namibian education system was based on democratic principles (Angula, 1999). Towards this end, from 1993, the previous teacher education programmes were gradually phased out and replaced with a new programme; the Basic Education Teacher's Diploma,

(BETD) that aims to train teachers in all subjects offered at basic education levels i.e. from grades 1 to grade 10. Teachers for grades 11 and 12 are currently trained in various fields of specialisation at the University of Namibia.

The BETD programme is a three year programme that trains teachers to teach in basic education, based on three levels of specialisations namely:

Lower primary (grades 1-4)
Upper primary (grades 5-7)
Junior secondary (grades 8-10)

In these levels of specialisations, student teachers are expected to major in any one of the following subject areas:

- Mathematics and Integrated Natural Science Education
- Social Science Education
- Languages Education
- Agriculture and Life Science Education
- Arts Education
- Commerce/Home Ecology/Technical Education

Training in these fields of specialisations are offered at the four colleges of education in Namibia.

The BETD programme strives to foster an "understanding and respect for cultural values and beliefs", "social responsibility", "gender awareness and equity".... "The understanding that learning is an interactive, shared and productive process; and enabling teachers to meet the needs and abilities of the individual learner" (Ministry of Basic Education and Culture and Ministry of Higher Education, Vocational Training, Science and Technology, 1998). The programme also places greater emphasis on the development of

the pedagogical as well as social aspects of the student. According to Swarts (1999), not only does the programme encourage the application of learner-centred pedagogy in all its forms, but:

> 'It provides a constructivist perspective to learning and student teachers are expected to experience the types of learning processes that they will have to facilitate and create for their learners'

As a constructivist driven programme, the BETD programme has been designed in such a way that the beginning of all teaching and learning is what the learner knows. The basic assumption of this theory of knowledge is according to Vrasidas (2000)

> 'that knowledge does not exist independent of the learner; knowledge is constructed and that even though a real world does exists, there are local and multiple realities.'

Therefore for any meaningful learning to take place the teacher must take into account the different ways learners learn and the fact that different learners bring different experiences to the learning situation.

With this scenario in mind, one would expect that both student teachers and teacher educators would have had enough practise in the use of group work as one of the tools employed to promote learner-centred pedagogy. On the contrary, it appears that both the stakeholders, in this case, the student teachers and the teacher educators are as yet not efficient enough in the effective utilisation of group work to promote cooperative learning in a learner-centred way.

The process of changing from a teacher-centred to learner-centred pedagogy can only take place if the teacher educators themselves are not only aware of, but also appreciate and

apply such learner-centred pedagogy in their practice.

According to Swarts (1999):

> 'Student teachers and teacher educators in Namibia show a greater appreciation of leaner-centred education in theory than in practice. It appears that both groups, in particular the teacher educators, need a "richer repertoire of teaching methods'

Numerous attempts have been made and are still being made to make teacher educators proficient enough in the use of group work, such attempts have done little to change the status quo. Wainaina (1998).

One mitigating factor is that, in the case of the teacher educators and even practicing teachers in the schools, over 90% of them received their training in an era prior to independence, when the dogma then was that of teacher talk and students listen. Swarts, (1999), alluded to this in her write up when she said:

> 'Since most of the teachers and teacher educators at independence were educated and trained according to the old paradigm of education, it was necessary to orient all teachers and teacher educators towards the new paradigm'

To change from this orientation has been and is still very difficult for most of us, as the learner-centred pedagogy is not only a new pedagogy, but we have not as yet received enough practice on how to go about making group work effective and efficient as Swarts, (1999), said:

> 'Some teacher educators in Namibia have found it difficult to reconcile their new role as facilitators of learning with their previous examining role. Some student teachers have also found it difficult to marry the two roles as a result of their assumptions about and conceptualisations of teaching and learning.'

Swarts, (1999), went further to confirm this when she said:

> 'A call is being made for the practicalisation of learners-centred strategies at in-service workshops as it is felt that even though teacher educators seem to know the "theory" of group work, not enough opportunities for the "practice" of group work have been provided to guide the teacher educators who will in turn pass on the skills to their student teachers to utilise this strategy in their teaching under the newly introduced pedagogy.'

In this section, I have given an overview of the education system in Namibia and the changes that were introduced in the education sector to achieve a learner-centred education. However, inspite of the good intentions of the government, there seems to be problems in the implementation of a learner-centred approach. It is therefore, necessary to explore where the problems lie and how they can be addressed

My research study intends to find out what the perceptions of third year science student teachers at the Caprivi College of Education are as regards group work. My belief is that until we know what group work means to the student teachers, then only can we be able to devise strategies to make the utilisation of group work by the student teachers more effective.

1.2 Literature Review

In this section, I examine local and international literature on group work and in particular the legislation introduced in Namibia after independence so as to give the context within which the study was conducted.

In the position paper, 'Towards Education for All', (MEC 1993), the government of the Republic of Namibia alluded to the fact that due to the inequities of the past, a radical shift has to be made in terms of the then prevailing educational system.

The present government in its attempt to pursue a pedagogy, which encourages an active participation of the learner in the learning process, decided to introduce the learner-centred system of education in all schools throughout the country.

In attempting to conform to this pedagogy, most educational practitioners have relied on group work as the vehicle for the transfer of and interaction with knowledge in a learner-centred way. However, placing learners in groups and asking them to work together does not ensure that they will work cooperatively. For according to Johnson, et al (1980),

> 'Placing people in the same room, seating them together, telling them they are a cooperative group, and advising them to "cooperate," does not make them a cooperative group'

Groups according to Johnson, et al (1980), can be classified into four categories:

1. **Pseudo groups**- are groups whose members have been assigned to work together but they have no interest in doing so, consequently, there is competition at close quarters and

members may block each other's achievement, confuse each other and communicate poorly. The result is that the sum of the whole group's efforts is less than the potential of the individual members.

2. **Traditional groups** - are groups whose members agree to work together, but see little benefit from doing so and as such members interact only to share information and clarify how to complete the task. The achievements are individually recognised and rewarded, as a result some members benefit, but others may be more productive working alone.

3. **Cooperative groups**- these are groups in which members commit themselves to the common purpose of maximising their own and each other's success. Its defining characteristics are a compelling purpose to maximise all members productivity and achievement, holding themselves and each other accountable for contributing their share of the work to achieve the group's goal. The result of this is that the sum of all the whole is greater than the potential of the individual members.

4. **High performance cooperative groups** - are groups that meet all the criteria for cooperative groups and outperform all reasonable expectations, given their membership.

This means therefore that just having the learners in groups is not enough; we have to put mechanisms in place that will make them work cooperatively in their groups.

When group work is just about the learners collecting facts about the same issue from the same type of text books, that activity does not qualify as a learner-centred one. On the other hand, if the teacher plans the group tasks carefully, and understand that the students' prior knowledge is crucial to learning, he/she is likely to promote learner-centred teaching

and learning, (Bennett, et al, 2001).If this is adhered to then, what the teacher sets up as a group work will conform with what a learner-centred task should be.

To better understand what the learner-centred approach entails, one needs to understand what brought about the change to this approach. Prior to the advent of constructivism, the epistemology that was dominant in most parts of the world was that of *objectivism*. This view of knowledge is anchored on the fact that knowledge exists outside the bodies of cognizing beings. Knowledge is out there residing in books, independent of a thinking being, (Johnson & Johnson, 1987). This approach to learning starts from the premise that the students come to the learning situation as empty vessels, more like thirsty sponges and the teacher then fills up these vessels with knowledge. Knowledge is then akin to some quantity that resides somewhere and can be used to fill the brains of the students. According to Jonassen, (1992a):

> 'the role of education is to help students learn about the real world. The goal of the teacher is to interpret on behalf of the students the meanings of events. Learners are told about the world and are expected to replicate its content and structure in their thinking'

However as early as 470 B.C, the philosopher Socrates, in finding a basis for his approach to teaching students by the use of questions in order to promote critical thinking, postulated that since the students can finally be led to discover the truths by the use of questions only, then the students, must have all along known the answers to the questions posed. In order words, the knowledge already exists in the individual learner's mind.

Constructivism as an epistemology is anchored on five assumptions, (Cobb, 1994; Jonassen, 1992a; Phillips, 1995). These assumptions include:

1. there is a real world that sets boundaries to what we can experience, but reality is local and there are multiple realities
2. the structure of the world is created in the mind through interaction with the world and is based on interpretation. Symbols are products of culture and they are used o construct reality
3. the mind creates symbols by perceiving and interpreting the world
4. human thought is imaginative and develops out of perception, sensory experiences and social interaction
5. meaning is a result of an interpretive process and it depends on the knowers' experiences and understanding

What this points to is that knowledge is not an alien quantity existing in vacuous isolation, but rather according to von Glasersfeld, (1984), knowledge does not reflect an objective, ontological reality, but exclusively an ordering and organisation of a world constituted by our experience. He continues to support the view earlier expressed by Piaget and postulates that knowledge is actively construed by the cognizing subject. Cognition is adaptive and allows one to organise the experiential world, not to discover an objective reality (von Glasersfeld, 1989).

All of these views except the one postulated by Socrates, have now been identified as the *radical theory of constructivism*. In von Glasersfeld's radical constructivist conception of learning, the teacher plays the role of a midwife in the birth of understanding as opposed to being a vessel of knowledge transfer. Their role is not to dispense knowledge but provide students with opportunities and incentives to build it up (von Glasersfeld, 1996).

What this implies is that knowledge, no matter how it is defined, is in the head of persons, and that the thinking

subject has no alternative than to construct what he or she knows on the basis of his or her experience (von Glasersfeld as quoted in de Zeeuw, 2001).
Therefore according to Von Glasersfeld, (1995),

> 'Experience is essentially subjective and though I may find reasons to believe that my experience may not be unlike yours, I have no way of knowing that it is the same'

To illustrate this approach let us look at the way two different teachers taught their classes. Bob, made sense of teaching from an objectivist –oriented perspective. To Bob, science was a body of knowledge to be learned. His job was to give out what he (and the textbook) knew about science to his students. Thus the learning environment he maintained in his classroom facilitated the transfer of knowledge. Students had to keep quite and work hard to 'absorb' the science knowledge efficiently. During one of his lessons on 'friction', Bob had he students complete a worksheet that covered the concept of friction. After the students completed the worksheet, Bob went over the answers so the students could have the correct answers for the test later in the week.
The second teacher John taught the same topic. In his class he had the students rub their hands together with and without lubricant so that they could see the purpose of motor oil in engines. The students conducted experiments with bricks to learn about different types of friction, and even watched a video of the Flintstones in class to point out friction and what could happen to red when he uses his feet to stop the car, etc. John's perspective to teaching and learning is the constructivist approach. Lorsbach & Tobin, (1992)

The von Glasersfeld concept of radical constructivism is not the only interpretations of this active approach to learning.

There exists other interpretation of constructivism, the one that is spoken of as widely as the radical constructivism approach is that of the social constructivism. Heylighen (1993) defines *social constructivism* as a consensus between different subjects as the ultimate criterion to judge knowledge. Truth or reality will be accorded only to those constructions on which most people of a social group agree. Social constructivism is usually associated with Lev Vygotsky, a Russian psychologist. (Vygotsky, 1987), developed a theory of social constructivism that has four principles. These principles include:

1. Making meaning
    a. The community plays a central role
    b. The people around the student greatly affect the way he or she sees the worlds
2. Tools for cognitive development
    a. The type and quality of these tools determine the pattern and rate of development
    b. The tools may include: important adults to the student, culture, language.
3. The zone of proximal development
    a. According to Vygotsky's theory, problem solving skills of tasks can be placed into three categories. These are (i) those performed independently by the student; (ii) those that cannot be performed even with help; and (iii) those that fall between the to extremes, the asks that can be performed with help from others.

In a Vygotskian classroom therefore, learning is promoted through collaboration-collaboration among students, and between students and teacher. From a social constructivist perspective as students share background knowledge and participate in the give and take of collaborative and cooperative activities they are actually negotiating meaning

and sharing knowledge. They are building knowledge not as individuals, but as a group. Maddux et al. (1997).
Speaking specifically about Mathematics, (Cobb, 1994), argued that Mathematics learning should be viewed as both a process of active individual construction (radical constructivism) and a process of enculturation into the mathematical practices of wider society (social constructivism). In this case knowledge is both individual and shared. Unless the socially constructed knowledge is being processed in the individual's mind and related to her experiences, it will not be meaningful.

So while in objectivism models, learners are expected to regurgitate facts that were taught to them by the teacher and there is little room for the learners to question these facts and interact amongst themselves, the constructivist model preaches the ideal that the knower (learner) interprets and constructs a reality based on his experiences and interactions with his environment.
If we accept the constructivist approach, then learning is not just about finding the right answer, and by implication the process of finding that answer is more important than the product (answer). Learning is a process of constructing meaningful representations and in this process for a learner to err is seen as a way of gaining insight. This then makes the learner become an active participant in the learning process, as it is only by so doing that the learning will emphasize the development of meaning and understanding.

Understanding how learners learn will provide the context for us as teachers to understand how we can improve our teaching. According to Smith (1999):

> 'Learning is seen as a process that involves changes in student's conception - how they see, experience, understand and conceptualize the world around them'.

Learning in this way is said to be learner-centred as it is internally controlled and mediated by the learners; it provides multiple representation of reality; it supports collaborative construction of knowledge through social negotiations; it diagnoses teaching and attempts to remedy learners errors and misconception and it is based on the approach of guiding the learner from what is presently known to what is to be known, (Jonassen, 1992a).

To utilise a learner-centred pedagogy, one has to employ teaching strategies that make learner participation as well as what the learner knows and can do paramount. It also entails that learning should start with the learner's experiences and use these experiences to help the learner to construct meanings.

Strategies that promote this method of learning include collaborative and cooperative learning.

What then is cooperative learning? Deutsch, (1962), defined cooperative learning as the instructional use of *small groups* so that students work together to maximise their own and each others learning. Class members are organised into *small groups* after receiving instructions form the teacher. They then work through the assignment until all group members successfully understand and complete it. The use of cooperative learning can then be fostered through group work, pair work and similar strategies that allows the learner to play an active part in the learning process.

Policy documents in Namibia such as; *MEC position paper of , 1990 ; MEC directive of ,1992; MEC, Basic Education in Namibia – 1992;MEC, the way forward to 1996 of 1991,* all

recognised the need to reform the educational system in place before independence. This process culminated in the educational brief *Towards Education for All, of 1993*, which as the guiding policy directive from the Government of the Republic of Namibia clearly states the direction of the reform process when it states that teaching must be learner-centred and must aim towards:

- An enlightened understanding of humankind, its culture, its traditions, and its history
- a methodology that promotes learning through understanding and practice directed towards the autonomous mastery of living conditions
- promoting and protecting the fundamental equality of all learners and equity in their access to, their work in, and their benefits from the learning environment
- introducing and encouraging classroom practices that reflect and reinforce both the values and practices of democracy
- a curriculum that treats learning as an active process that works best when learners participate in developing, organising, implementing and managing it
- encourage students to learn to analyse and synthesize, to imagine and explore, to criticize and create, to understand and use. Students must also learn to relate what-is-now to what-can-be and how to get there.

Angula, (1999), puts all this in context when he said:

> 'The new curriculum placed the learner at the centre of learning. The learner was to be an active participant in the learning process.... Teaching and learning were therefore learner-centred. Group and project work, demonstration lessons, debates, presentations and communication activities were encouraged. The goal of teaching and learning was to enhance understanding, problem solving, and democratic learning'

In the Namibian context therefore the basic principle of learner-centredness will be according to Dahlstrom, (1995), that of:

> 'Acknowledging the student's previous knowledge, skills, attitudes, and ideas as a foundation for further learning. It also acknowledges the students as "subjects" in the educational process who had something to contribute. Cooperation and empathy were considered important in combating individualistic views of education'

Group work or cooperative learning is one of the most commonly used strategies in this regard. A close look at what group work means to all the stakeholders is crucial to an understanding of what group work should be and how it should be conducted if anything tangible is to be achieved from the use of this strategy.

Johnson, et al, (1983), recorded more than 550 experimental studies and 100 correlation studies that deal with research on all areas of cooperative learning. There are to date over 900 research studies validating the effectiveness of cooperative learning over competitive and individualistic learning modes, (Johnson, et al 1999). The same researchers reported that in the past three decades modern cooperative learning has become a widely used instructional procedure right through pre-school to graduate school levels in all subject areas, in all aspects of instruction and learning, in non traditional as well as traditional learning situations, and even in after - school and non-school educational programs. The wide use of the cooperative approach can be understood if one looks at the factors that make it such a popular approach. These factors include the fact that:

1. Cooperative learning unlike most other instructional approaches exploits the individual differences in the

learners to promote learning in a cooperative way. These individual differences which can result from, academic ability, race, culture, sex etc. can be taken care of if learning is structured based on the cooperative learning model.(Johnson, et al. 1999).

2. Cooperative learning also allows for the achievement of multiple educational goals. These educational goals can be both academic and social goals. Although academic learning goals hold primacy in most schooling efforts, teachers are also deeply concerned about how their learners interact socially, as this has an impact on how they learn (Goodlad, 1984). According to Antil,et al (1998):

> 'The preponderance of instructional strategies (e.g. lectures, demonstrations, explanations etc) focus on academic goals, providing few opportunities for students to learn and practice interpersonal skills.'

Only cooperative learning can offer this possibility.

3. Cooperative learning is one of the few educational approaches that is not just a theory, but an approach that has time and again been validated by research as well as by its applicability to almost all endeavours of mankind. Johnson, et al, (2000)

4. As an approach that has stood the test of time, cooperative learning has been compared with other instructional models, all of which have not been able to conform to the requirements of the new paradigm shift. This new paradigm, the learner-centred approach goes against the previous conceptualisation of learning as a simple case of transmission of knowledge from teacher to learners, to one that places the learner in the centre of the learning situation, where knowledge is a matter of social construction. Vygotsky, (1978).

The widespread use of cooperative learning has made it to become one of the most widely interpreted learning modes. Cooperative learning is actually a generic term that now refers to numerous methods for organising and conducting classroom instruction. Any teacher at any one time can and does make use of his/her own procedure in structuring learning that is cooperative in nature.

However, there have been recognised "researcher-developers" who have developed cooperative learning procedures, conducted programs of research into their approach, and evaluated and validated their methods, (Johnson, et al 2000). These recognised "researcher-developers" are now referred to as the creators of modern day cooperative learning procedures (See table 1.1)

Table 1.1. Modern Methods of Cooperative Learning

Researcher-Developer	Date	Method
Johnson & Johnson	Mid 1960s	Learning Together & Alone
DeVries & Edwards	Early 1970s	Teams-Games-Tournaments
Sharan & Sharan	Mid 1970s	Group Investigations
Johnson & Johnson	Mid 1970s	Constructive Controversy
Aronson & Associates	Late 1970s	Jigsaw procedure
Slavin & Associates	Late 1970s	Student Team Achievement Divisions
Cohen	Early 1980s	Complex Instruction
Slavin & Associates	Early 1980s	Team Accelerated Instruction
Kagan	Mid 1980s	Cooperative Learning Structures
Stevens, Slavin, & Associates	Late 1980s	Cooperative Integrated Reading & Composition

Table adapted from Johnson,et al (2000)

All of these procedures as examples of cooperative learning procedures require that learners sit in groups.

Cooperative learning, of which group work is just one approach, is said to exists when *learners work together to accomplish shared learning goals* (Johnson & Johnson, 1999). It is in the process of accomplishing these shared learning goals, that the important characteristics of cooperative learning, which makes it such a popular approach, become evident.

In the first instance for a learning situation to be called a cooperative endeavour it has to satisfy certain criteria. According to Johnson and Johnson, (1999), the basic components of effective cooperative learning are:

1. Positive interdependence
2. Promotive (face to face)interaction
3. Individual and group accountability
4. Appropriate use of social skills
5. Group processing

Positive interdependence in a group setting entails that the learners have to re-orientate their thinking from that of *me* instead of *them* to that of *we* instead of *me*. This means that each learner in a cooperative situation should perceive that he/she is linked with other learners in the same group, such that he/she cannot succeed unless all the other learners in the group also succeed and vice versa. In other words, group members have to know that they '*sink or swim together',* and that when they are working cooperatively, they have two choices: either to all contribute their share to the resolution of the group tasks and by so doing, they all benefit, or they do less and face the grave consequence of failing to complete the group tasks and in so doing learn nothing.

According to Johnson & Johnson, (1989), there are two types of interdependence: outcome interdependence and means interdependence. Cooperative learning can only take place if

both types of interdependence occur. When there is no goal or reward interdependence (outcome interdependence) therefore, there will be no cooperation or competition. Means interdependence specifies the actions required on the part of the group members to complete the task. Means interdependence therefore includes the resources, role and task interdependence, all of which overlap and are not completely independent from one another.

If learners become aware that if they do not contribute their own share of work that is required to solve the group task, then the whole group fails, they will in all probability put in more effort to ensure that their group is able to carry out the group task successfully. Therefore, when group members perceive their potential contribution to the group as being unique, they increase their effort. Whereas when members of the same group realise that the group can still achieve its objective of completing successfully the group task, with or without their own contribution, then such group members are likely to reduce their efforts. Therefore, for cooperative learning to take place in group work, the group task has to be one that requires positive interdependence for its successful completion.

Research such as that done by Johnson and Johnson, (1986); Johnson & Johnson, (1981); D Johnson ,et al, (1980); Skon, et al, (1981), all concluded that positive interdependence does more than simply motivate individuals to try harder, it facilitates the development of new insights and discoveries through promotive interaction. Members of cooperative groups use higher level reasoning strategies more frequently than do individuals working individually or competitively.

Promotive (face to face) interaction requires that learners in each group meet face to face and discuss the contributions of

each individual learner with a view to making it even more complete. In such a situation, promotive interaction according to Johnson & Johnson, (1989), is characterised by students :

a) Providing others with efficient and effective help and assistance

b) Exchanging needed resources and processing information more efficiently

c) Providing each other with feedback in order to improve their subsequent performance on assigned tasks and responsibilities

d) Challenging each other's conclusions and reasoning in order to promote higher quality decision making

e) Advocating exerting efforts to achieve mutual goals

f) Influencing each other's efforts to achieve mutual goals

g) Acting in trusting and trustworthy ways.

In a cooperative learning environment, it is crucial that there exists individual and group accountability. The absence of this factor will result in either individual learners doing less than their own share of the work, or other learners shouldering the bulk of the responsibility for solving the task. To ensure that there is individual accountability during a cooperative learning situation, it is necessary to make sure that the task that is given will be such that requires the contribution of each and every learner in the group for it to be successfully completed. According to Johnson & Johnson, (1999):

> 'members will reduce their contribution to goal achievement when the group works on tasks where it is difficult to identify individual members contribution, when there is an increased likelihood of redundant efforts, when there is a lack of group cohesiveness, and when there is lessened responsibility for the final outcome'

It is fine to say all members of the group have to contribute in order to ensure individual accountability. However, the larger

the group, the less likely it is to ensure equal individual contribution and by implication, individual accountability will be compromised. The sheer size of some groups will make it impossible for each and every learner to contribute equally. Hence the smaller the size of the group, the greater the individual accountability will be, (Messich & Brewer, 1983).

For learners to be able to work in groups in a cooperative way, they have to be taught at least the rudiments of group skills. They have to know that the opinion of each and every learner in the group is of equal importance. They also have to realise that each and every one of them should be given the opportunity to have a say in the final group answer, and that other learners contribution to a group answer should form part of the group's final answer except when such an individual learner can be convinced otherwise. When learners are made aware of these features of group skills, the group work that they will be involved in will become more productive. A happy group that contains learners who respect and appreciate each others opinion will have fruitful discussion and successful completion of the task assigned than a group in which members have no respect for each other and each learner thinks he/she is right. Research done by both Lew, et al, (1986) and Mesch, et al, (1993), both confirmed that the teaching of social skills to group members before the commencement of group task, led to higher performance by all group members and promoted the highest achievement.

A reflection on what has happened during group work by the learners of each group can help group members achieve higher performance the next time. This reflection can also ensure that the group members can decide to work in a different way next time. They then realise that learning is not only possible by successful completion of a task, learning can be achieved by

being able to see what went wrong and what could have been done differently. This is a far more progressive way of learning cooperatively. Yaeger, et al. (1985), examined the impact of achievement of (a) cooperative learning in which members discussed how well their group was functioning and how they could improve its effectiveness and (b) cooperative learning without any group processing. They found out that in the case of the former, high, medium and low achieving students in the group which used group processing achieved higher on daily achievement, post-instructional achievement, and retention measures than the students in the groups without any group processing.

During group tasks, therefore, it is expected that learners have to learn not only to speak and express their views, but equally important, they also have to learn to listen to other views even if they are contrary to theirs. Most of the failures with the implementation of group work that I have witnessed in my practice had to do with the fact that the student teachers themselves are under the impression that group work is just about finding the answer to the problem posed to the group. They fail to see that finding answers to the problems posed could have been achieved by just one learner with little or no contribution from the other learners. They have also failed to see that this dominance by just one learner in a group can be eliminated if the learners listen to one another, or share ideas, and if they try other options.

1.2.1: Research Methods on Students Attitudes

My research intends to find out what the perceptions of third year science student teachers at Caprivi College of Education are on what constitutes group work and by so doing offer strategies that will help with the effective implementation of group work in their classrooms.

One of the key challenges in addressing this question was the method to be used. In attempting to find the best methods, three major studies which eventually formed the basis of the method adopted here were reviewed. These are the studies of Bennett et al (2001), Hewson & Hewson (1989), and Penlington & Stoker (1998).

1.2.1.1: "The work of Bennett, et al. 2001.

Research that involves the measurement of attitudes have always been difficult to carry out. According to Bennett, et al (2001), in their research on assessing student's attitudes to the study of Science,

> 'there is little consensus over what data should be gathered and which techniques should be used to gather the data. There is also a large body of literature on 'how not to measure attitudes'!'

They attempted to develop an instrument to assess student's attitudes to the study of Science. In this study, the authors made use of the student's experiences and views in designing the instrument. The instrument which is a fixed response questionnaire was aimed at providing more useful information than the Linkert scale questionnaire normally used to gather data on attitudes. This approach ensures that relevant and meaningful data is collected, as the students are able to respond to and associate with the items on the questionnaire since such items were generated from their views.

The generation of the fixed response questionnaire was carried out in three phases. The first stage involved the use of an open format questionnaire to gather data related to attitudes to the study of Science from a representative sample of students.
This open format questionnaire was developed under four strands that have to do with the study of science. In depth interviews were then held with a selected sample of students to collect data on their views under each strand. The results of the interviews after analysis produced 15 statements under each strand. The statements in each strand were then phrased as both positive and negative statements.
A representative sample of students were then presented with the statements under each strand. Some students were presented with positive version of the statements while others were presented with negative versions of the statements under each strand. The students were asked to say whether they agreed or disagreed with the statement, and to explain why they agreed or disagreed. A total of one hundred and ninety six students took part in this stage of the study.
From the responses obtained, the researchers then identified categories that were used to develop the fixed response questionnaire to assess the students attitudes to the study of Science.

1.2.1.2: "The work of Hewson & Hewson (1989)."

One of the studies which was found interesting and could yield rich data was that of Hewson & Hewson, (1989). This study involved the 'analysis and use of a task for identifying conceptions of teaching science'. The research is based on the premise that:

> 'science teachers need to know what their students' existing conceptions are, and why they hold them. They can thus more readily assist students to find new conceptions intelligible, plausible and fruitful and, if necessary, can take measures to create dissatisfaction with existing conceptions which conflict with those to be taught.' (Hewson & Hewson, 1989).

This assumption is based on the fact that in most cases, students alternative conceptions or misconceptions show a striking similarity when compared with those of other students in similar settings.

In the teaching of science, a similar sequence has been observed. It has been noted that teacher thinking and teacher action in class are closely related. Teacher thought includes teachers' theories and beliefs amongst others, while teacher action include teachers' classroom behaviour and students' classroom behaviour and achievement.

The study indicates that the nature of teacher thinking is diverse, complicated, fluid and intimately connected in many different ways with teaching as an activity. And as a result, a study of what these thoughts are will shed more light about how to improve the teaching of science.

The task that the researchers developed to measure these conceptions was one that involved the use of interviews about instances, a technique that was developed by Osborne & Gilbert (1980) cited in Hewson & Hewson (1989). In this situation, sets of instances/non-instances are developed that have to do with the teaching of science. These instances were mainly drawn from day to day classroom events, components

of appropriate conception of teaching science and finally a diversity of views about these conceptions were also included to eliminate the possibility of bias. The final set of instances that they chose did not only include generally agreed instances and non-instances of teaching science, but also instances that were controversial, so as to challenge the thinking of the subjects. They developed three sets of instances for the three areas of science namely biology, physics and chemistry. An analysis scheme was also developed that was used to represent the subjects responses from the interview. This analysis scheme consisted of six categories. Five of these categories were obtained from what the researchers considered to be components of conception of teaching science. The last category was derived from an initial analysis of the interview transcript. These categories included,

1. nature of science
2. learning
3. learner characteristics
4. rationale for instruction
5. preferred instructional technique
6. conception of teaching science.

The task was then used with thirty students in a secondary science teacher certification programme. Seven of these students were at the start of the methods course and twenty of them were interviewed towards the end of the methods course. Seven other students were interviewed during their teaching practice sessions, four of whom were being interviewed for the second time. All interviews were taped, transcribed and analysed using the analysis scheme that was developed. Their conceptions were then compared. Differences were observed between the conceptions students held before the methods course. There were also similarities in conceptions held by

students before and during the methods course as well as during their teaching practice sessions.

1.2.1.3: "The work of Penlington & Stoker, (1998)."

A similar study that also measures attitudes was that conducted by Penlington, & Stoker, (1998). In this study the authors studied 'key teachers' perceptions of cooperative learning and group work in the teaching of Mathematics. The researchers made use of a small sample of key teachers. The six key teachers were interviewed twice to obtain their views as to what is cooperative learning and group work. The first interview which was semi-structured resulted in the development of a number of statements about various aspects of group work. These statements were used to set up a card sorting activity that was used in the second interview. In the second interview, the key teachers were presented with the statements developed and asked to order the statements according to the extent, of which they agreed with the statements, disagreed with the statements and statements that they were unsure about with regard to group work. The key teachers were also asked to comment about their reasons for choosing a particular order.

The key teachers were requested to keep and submit six journal reports reflecting on several aspects of running workshops and aspects of group work.

A final instrument used was an observation schedule in the form of field notes that were kept by one of the researchers on each of the key teachers.

Both interviews were transcribed and coded, and the teachers field notes and written evaluations were typed up. Units of meanings were identified in the data and using the constant comparison method of Lincoln & Guba, (1985), and Maykut & Morehouse, (1994), as quoted in Penlington, & Stoker, (1998) these units of meanings were constantly compared for emergent themes. The results indicated amongst others that:

- All mathematics teaching should be done in groups
- Groups need to be encouraged to compete
- Teachers should guide students to the right ideas
- The most important reason for putting children in groups is so that the teachers can get to know them better
- Children cannot learn anything new by working in groups without the teacher present
- Mixed ability groups mean the slower children will copy from the quicker ones
- Children become reluctant to work on their own because they become dependent on group work

My methodology sought to combine the aspects of the three studies with the view to providing rich data on student teachers' perceptions about group work. A detailed explanation of how different aspects of these studies were used are given in chapter 2 on the research methodology.

1.3 Aim of the Study

The study aims to find out what the perceptions of third year science student teacher's at the Caprivi College of Education are as regards group work. This group of student teachers were admitted into the Basic Education Teacher's Diploma (BETD), in January of 1998,after the completion of grade 12. They were all majoring (some at upper primary level and some at Junior secondary level) in the subjects of Mathematics and Integrated Natural science and have minors in different areas such as Language education, Social Science education and Agriculture. During the course of their study they do a three week observation period in primary schools where they did learner studies in year 1, while in year 2, they did six weeks of school based studies (SBS), in a junior secondary or primary school of their choice, where they taught for the first time, their minor subjects. In the third year, in term two, which came after my study, they were out for SBS for a period of 12 weeks and they taught both their major subjects. At the completion of their study, in December of 2000, they were certified to teach Mathematics, Physical Science or Life Science in Junior Secondary (grades 8-10) or Mathematics and Natural Science & health Education in the upper primary phase (grades 5-7)

The results from the study will help me and possibly other teacher educators to design/develop strategies that will make for a better understanding of what group work really entails, so that student teachers can better apply the technique of group work more efficiently in their classrooms. As these strategies will be developed after taking cognisance of what student teachers perceptions are as regards group work, they will be better understood/applied by the student teachers.

This change in perceptions will also help clarify certain myths and assumptions about the use of group work in the minds of the student teachers and consequently help them apply the method in a better way when they become certified teachers. My research intends to find out what the perceptions of 3rd year students teachers in a three year basic education teacher certification programme are as regards what group work.

Chapter Two

RESEARCH METHODOLOGY

2.1 Subjects

My subjects in this study were first and third year student teachers majoring in Mathematics and Science Education. I made use of a cluster sample of one of the two classes that offer this option in both years 1 and 3. The year one class I used is composed of thirty-two student teachers, nine females and twenty-three males, and for year 3, there were 16 student teachers, twelve males and four females.

The subjects of the interview were selected from the third year class by the use of purposive sampling. Six student teachers made up of three males and three females were selected by this method. All of these students even before being admitted to the Caprivi College of Education would have been taught by the use of some learner-centred strategies. One such strategy that they would have been exposed to, would have been group work, as it was popular when the reform process began in 1993.

All of the students that took part in this study were admitted into the Caprivi College of Education as early as 1998, some of them, the first year student teachers were actually only admitted in the year 2000. They are therefore products of the reform process that began in 1993, and would therefore have been taught a number of times by what we believe is group work in conforming with the change in teaching approach from a teacher centred to a learner-centred one.

The third year student teachers who took part in the study will have additional exposure to different learner-centred strategies. As part of their training, all students in the Caprivi College of Education are taught their academic specialities in depth, but the

professional aspects of the training are stressed much more. They would in their third year of study already be conversant with various theories of learning and more importantly, they would have been used to the learner-centred approach as the Namibian approach to teaching and learning. They would not only have been taught what the learner-centred approach is, they would have used it during micro lessons in Science and Mathematics as well as in their minor subjects. More importantly, they would also have attempted to use it during practice teaching, which they had done in their second year of study in their minor subjects for six weeks. At the time of this study, they were busy with practice teaching in their major area of study in the third year. This period of practice teaching lasted for twelve weeks.

2.2 Research Instrument

In chapter one it was stated that this research draws from three studies that of Bennett, et al, (2001), Hewson & Hewson, (1989) and Penlington & Stoker, (1998). It uses the open format questionnaire similar to the one used by Bennett et al, (2001) and adopts the method used by Hewson & Hewson (1989),in developing "scenarios" about the teaching of Science. In this case, scenarios which depicted instances and non instance of group work were used as the focus of the interview while Hewson & Hewson (1989), used similar scenarios on the teaching of Science to elicit conceptions about the teaching of science. In addition, interviews similar to those conducted by Penlington & Stoker (1998), were used in this study.

My initial plan was to make use of a questionnaire (Linkert scale) to find out what the perceptions of the student teachers are, however since perceptions are actually attitudes, it was found to be difficult to categorise the individual perceptions to fit all the possible perceptions. It was found out that an open format rather than a closed format (Linkert scale) questionnaire will provide more detailed descriptions of what the perceptions in general are of the subjects,(Bennett, et al, 2001). I therefore employed the open format questionnaire of twenty items and from the responses obtained I was able to generate six major areas of concern that have to do with group work, that the students took different positions on.

Using these six areas of concern, I then set out to generate a series of classroom group work related scenarios that the students were required to respond to in a semi structured interview setting. The students' response to each set of scenario was envisaged to be either instance of group work (I), non instance of group work (NI) or both (NI/I). This approach similar to that employed by Penlington & Stoker, (1998), required that the

students then give reasons for their choice. The interviewer was also free to probe further on those reasons.

This approach was seen to provide a more detailed and richer information as to what the perceptions of the students are as regards what constitutes group work, unlike what would have been obtained if the questionnaire alone was used to measure such perceptions.

2.3 Phase 1: Preliminary Study

Stage 1: Designing the open format questionnaire

In developing items for the open format questionnaire, I was influenced mainly by the writings of Johnson & Johnson (1987); Cohen, (1986); Kagan, (1992); Sharan, (1990) and Slavin, (1990). All of these authors are recognised as eminent researchers in the field of group work. The factors they identified as important in group work such as positive interdependence, promotive interaction, group processing, individual and group accountability as well as appropriate use of social skills, formed the basis of categorisation of the questions that appeared in the open format questionnaire.

In order for the student teachers to understand the questions and relate to them, however, the factors identified were then rephrased and new headings were used that essentially covered all the factors. These headings included:

1. modes of learning
2. composition of groups
3. type and nature of group tasks
4. group processes
5. assessment of group work

Four questions were designed under each heading, making a total of twenty questions (appendix A) and as much as possible, the questions tried to cover all areas that are of concern to the student teachers, and that I felt could elicit valuable response from the student teachers.
All twenty questions were typed with spaces between questions where the student teachers were requested to write their

responses, with the proviso that they could write on the back of the papers if the space provided is not enough.

Stage 2: Administering the open format questionnaire

The questionnaire was administered to forty eight (48) student teachers that were made up of thirty-two (32) first year student teachers and sixteen (16) third year student teachers. Both the first year as well as the third year students were from one of the two classes that are specialising in the Mathematics and Science major option and the particular classes were selected by cluster sampling. According to Borg, et al, (1993) cluster sampling method is used when it is more feasible or convenient to select groups of individuals than to select individuals from a defined population. The main advantage for this type of sampling is that it allows for the selection of the whole classroom as the unit of sampling.

Stage 3: Analysing the data from the open format questionnaire

The main purpose for the use of the questionnaire was that of getting the student teachers' general views/perceptions as to the various aspects of group work and further probe these views in more detail at a later stage.

Out of all forty eight (48) questionnaires that were administered, thirty-eight (38) or 79% were returned. Sample answers from the returned questionnaires were tabulated (see appendix B1.) The returned questionnaires were analysed individually to identify recurring themes, which we will now call strands (and these strands were further streamlined to fit into a frame of categories. The recurring strands (appendix B2) that were identified from the sample answers included:

1. what constitutes group work
2. teachers' role during group work
3. learners' role during group work
4. composition of groups
5. accountability in groups
6. purpose of group work

As can be seen from the identified list of strands, strands such as composition of groups and accountability in groups (see above), were already part of the initial categories that formed the headings for the open format questionnaire. In addition to these headings (categories), a further three very important strands were identified by the subjects as important aspects of group work. These are: teacher's role during group work, learner's role during group work as well as purpose of group work. Hence the open format questionnaire provided a rich trove of information that allowed for what the students felt was important to consider during group work to be identified, Bennett, et al (2001).

2.4 Phase 11: Development of Scenarios

Stage 1: Designing scenarios

The second phase of this study involved the development of a set of twenty four classroom groupwork related scenarios that the student teachers had to respond to. This approach is drawn from a combination of the work done by Hewson & Hewson, (1989); Penlington & Stoker, (1998) as well as, Bennett, et al, (2001).

The scenarios were based on the factors (strands) that emanated from the student teachers response to the open format questionnaire.
Responses to these scenarios were expected to further provide a richer and more useful data as to student teachers perception as to what desirable elements of group work are and provide a focus for the interviews. This is so because most of the strands that formed the categories under which the scenarios were developed, were strands that the students themselves identified as well as the explanations they gave. It was also necessary before developing the scenarios to compare the identified strands with what group work researchers such as Johnson and Johnson,(1987); Cohen, (1986) Slavin, (1990); Sharan, (1990); and Kagan, (1992), considered as important aspects of group work. An amazing similarity was observed to occur between these two groups.

Table 2.4.1 below summarises these similarities:

Table 2.4.1: Comparison of factors that group work researchers and student teachers' considered as important in group work

Strands identified by student teachers	**Factors Considered important by group work researchers**
Learners role during group work	Positive interdependence Promotive interaction
Teachers role during group work	
Composition of groups	Group processing Appropriate use of social skills Promotive interaction
Purpose of group work	
What constitutes group work?	
Accountability in groups	Individual and group accountability

In designing the scenarios, it was kept in mind that student teachers should not only just respond to them as yes or no, but also allow for them to think and be able to relate to them, so that more useful information can be obtained. Different strategies were employed to ensure that this is achieved.

Firstly, the scenarios were composed mostly of classroom group work related situations that the student teachers have either been in or facilitated during their practice teaching.
Secondly, the scenarios were made up of situations that could be considered as instances or non-instances of group work; thirdly, some of the scenarios were intentionally made to be controversial i.e. they were scenarios that could not be easily pinned down as either instances or non-instances of group work. This means that such scenarios can be categorised depending on the context or situation. This was done to provoke reaction in the respondents that could lead to a revelation of their true perceptions and to sensitize them to the importance of being flexible when approaching group work.

With these factors in mind, twenty-four classroom group work related scenarios were designed. Four scenarios were developed for each of the six strands identified (appendix C).

Stage 2: Refining and validating the scenarios

To ensure reliability of this instrument, the scenarios underwent a validation process.

Firstly, both my supervisor and myself responded to the scenarios as subjects and commented or provided reasons for our choices.

Secondly, four of my professional colleagues, made up of a Science education lecturer, a Mathematics education lecturer, an English education lecturer and a Lower primary education lecturer were requested to take part in this process. The choice of different lecturers with different subject areas of specialization was intentional and was made to ensure that different opinions as to what the desirable elements of group work are can be covered regardless of subject background.

The four professional colleagues were required to respond in writing to scenarios, by indicating if they think a particular scenario is:

1. Instance of group work (I): if you think the scenario contains elements of good group work practices.

2. Non Instance of group work (NI): if you think the scenario does not contain elements of good group work practice or if the scenario contains elements that could be termed as bad/negative group work practices.

3. Both instance and Non instance of group work (NI/I): if you feel that the scenario contains elements of good group work practice which could be said to be bad or good depending on the context, i.e. contextual elements of group work.

All of them responded to the scenarios, and their responses together with my own responses to the scenarios were tabulated and compared, (appendix D1 – D4).

There was a large degree of differences between the individual responses of my colleagues. There were also differences between the responses of these colleagues when compared to my response. As this was not anticipated, further work had to be done to ascertain why there were differences.

To try to understand the reasons for these disagreements, I again requested my colleagues to provide reasons/explanations for their responses. A critical analysis of the reasoning behind our respective choices was done and as can be seen below, this formed the basis for the finalisation of the scenarios:

2.5 Validating Scenarios with Professional Colleagues

In validating the scenarios, an attempt was made to understand the reasoning behind the choices that the respondents including myself had for making these choices. The responses were tabulated and then analysed to discern which scenarios the respondents were in agreement and which scenarios they were not in agreement. The outcome of the validation process, which was based on what the majority of respondents agreed on, then ensured that the final instrument was the result of a collective agreement between professional colleagues from different academic background (see key below) and as such any subject bias was eliminated before the final scenarios were tested on the student teachers'.

R1: Lecturer in English communication ;
R2: Mathematics Education Lecturer
R3: A Science Education Lecturer
R4: Lower Primary Education Lecturer

KEY

FA: Full Agreement (scenarios where all five respondents are in complete agreement)

MA: Majority Agreement (scenarios in which four out of five respondents agree with the exception of one respondent

MD: Majority decision (scenarios in which only three out of the five respondents agreed with the other two either agreeing or disagreeing amongst themselves

SD: Major Split Decision (scenarios in which respondent are divided among the three choices (2, 1, 2). In these cases, differences could be contextual or the fact that the scenario is ambiguous.

I: Instance of group work (scenarios that contain elements of good group work practice)

NI: Non Instance of group work (scenarios that do not contain elements of good group work practice)

NI/I: Both Instance and Non instance of group work (scenarios that contain elements of group work practice which could be said to be good or bad depending on the context or situation)

Expected Answer: Indicates the outcome that I had expected from the student teachers; after the validation process.

The table below summarises the responses of my colleagues to each of the scenario.

NATURE OF GROUP TASK:

Responses of professional colleagues

Table 2.5.1: Validation of scenarios under the category of nature of group task

SCENARIO	NI	I	NI/I	DECISION	EXPECTED ANSWER
a.	4	-	1	MA	NI
b.	2	2	1	SD	NI/I
c.	-	4	1	MA	I
d	1	4	-	MA	I

Scenario a. A teacher comes into the classroom and arranges his/her learners in groups of four and proceeds to read from a text book at the end of which he asks them to answer some questions that he/she wrote on the board.

Comments: I felt that this scenario was NI/I as the element of discussion is not emphasised, so even though they are in groups, the type of questions could affect the discussion. However all my colleagues felt that the scenario was an NI for different reasons. R1 and R2 felt that just reading and writing is not group work. While R3 felt that the task could be done individually by the learners R4 said the learners do not seem to be working in groups.

Scenario b. A student teacher comes into a class and instructs his/her learners to arrange themselves in groups of four each. He then writes a set of questions on the board and tells them to answer it in their groups in the stipulated time. He collects and marks the papers and returns it to the learners.

Comments: R3 and myself both had it as NI, however R3 felt that the stipulation of time made it to be NI. I was of the opinion that the lack of feedback after the group work made it NI.

Both R1 and R2 had it as I. While R2 thought that there was a feedback, a closer look at the scenario showed that the teacher just marked the scripts and returned them to the learners without any feedback, in this case therefore the response of R2 could be due to a misunderstanding of the scenario.

R1 felt that this arrangement gave room for discussion, which I fail to see, as the discussion to me will depend on the type of task given. R4 was of the opinion that it could be NI/I depending on the nature of the question.

Scenario c. A teacher places his learners in groups randomly and hands out a worksheet that is based on an experiment that they

are to perform in the class. He further instructs them to write down what they observed and report back their findings the next day for discussion in class.

Comments: Here there is a majority agreement as to the class of the scenario from everyone except R4 who had the scenario as NI/I. R4 felt that for the task to be an I, the learners will have to make different contributions. R2 felt that the scenario is an I since the learners are expected to answer the questions based on what they have observed. For R3 the scenario is an I as due to inadequate resources, experiments could be done in groups.
The reason for R1 placing the scenario as an I is that learners are mixed for them to exchange ideas

Scenario d. A teacher sets up project work for his learners to do out of class. Each group is required to visit an industry and carry out a survey on the environmental impact the industry has on the local environment. They are to take two weeks and compile a report that they will then have to present in class.

Comments: A majority decision except for R3, whose reasoning is not clear. R3 seems to imply that the scenario is a NI because attending to groups should be less demanding on the industry than attending to individual members of the class.

Decision Taken

In this category, the respondents are in agreement (majority) in all the scenarios except for scenario (b), in which there was a split decision. From the responses, it became clear that the disagreement among the respondents could be due to the complexity of the scenario that is different respondents focussed on different aspects of the scenario individually and commented on these exclusively. These aspects, which include time, composition of groups, type of questions asked, as well as the discussion during group work are all important components of group work. This scenario will be discussed further in the

validation based on literature findings. These aspects were however eliminated in the interviews with the student teachers, by the fact that I continuously directed them to respond to specific aspect we are concerned with by probing their answers.

TEACHERS' ROLE DURING GROUP WORK:

Responses of professional colleagues

Table 2.5.2: Validation of scenarios under the teachers' role during group work

SCENARIO	NI	I	NI/I	DECISION	EXPECTED ANSWER
a.	-	5	-	FA	I
b.	1	3	1	MD	I
c.	5	-	-	FA	NI
d.	3	1	1	MD	NI

Scenario a. A teacher during group work observed that all the learners in all the groups are on the wrong track. He proceeds to redirect them so that they can see where they have gone wrong and then allows them to proceed on their own.

Comments: There was full agreement on this scenario. So no further action was taken.

Scenario b. A teacher realizes that in one group the approach they are using to solve the problem is different from the instruction he gave them. He goes over to the group and tells them they are wrong and that they should follow the instructions they are given.

Comments: A majority decision that tends towards I. However R2 had it as NI as he felt that the teacher should allow them to discover the method for themselves.
In my own case I had it as NI/I as I felt that the intervention of the teacher defeats the aim of group work, one of which is to encourage/arouse the curiosity and innovation in the learners. Of course in an experiment this might not be a problem.
The reasoning of both myself, a Science lecturer and R2 being a Mathematics lecturer can be explained in the sense that we both teach subjects using methods that allow for and actually encourage learners to explore/try other methods except during experiment.

Scenario c. After instructing the learners on what to do, the teacher sits down and allows the groups to carry on working. When asked by the learners for help, he refuses, saying that this is a group work, they should find the answers themselves.
Comments: There was full agreement on this scenario. So no further action was taken.

Scenario d. At the end of the group work, the teacher asks the learners to report back while the rest of the class sits back and listen. A number of groups made wrong conclusions, but the teacher allows this to go on and at the end he allocates grades to each group.
Comments: A majority decision tending towards NI. R1, R4 and myself placed this as NI. We all felt that it was the duty of the teacher to intervene and correct learners when they go wrong.
R3 placed it as I. However the reason given seems to suggest that he also felt it should be NI, as he said 'for future purpose he (teacher) can correct them.
R2 had it as NI/I
Decision Taken

In this category, there was a general agreement (in some cases majority agreement) among all the respondents and as such all the scenarios under this category were left as they are in the final instrument.

LEARNERS' ROLE DURING GROUP WORK:

Responses of professional colleagues

Table 2.5.3: Validation of scenarios under the category of learners' role during group work

SCENARIO	NI	I	NI/I	DECISION	EXPECTED ANSWER
a.	4	-	1	MA	NI
b.	-	5	-	FA	I
c.	2	3	-	MD	NI
d.	3	1	1	MD	NI

Scenario a. The teacher observed that during group work, the learners are actually working individually at the end of which they check each other's work. They then decide on a group answer by picking the answer that the majority of the learners obtain without a discussion.

Comments: The majority are all agreed that this is an NI. In my case however, I felt it could be NI/I. Some other aspects of group work are present except for the absence of discussion and as such I think it lacks a major characteristic of group work.

Scenario b. At the beginning of the group task, the group leader opens up the discussion and calls upon each learner to give his opinion/contribution/idea. This goes on for sometime until a solution that is clear and acceptable to all the learners is

obtained. The group leader tells the secretary to record this as the group answer.
Comments: There was full agreement on this scenario. So no further action was taken.

Scenario c. The group leader at the beginning of the tasks allocates a section of the problem to each member of the group to solve. When this is done, all the learners put their parts together to come up with a group answer.
Comments: A majority decision tending towards I. R1, R3 and R4 all felt that this was an I as they felt that all the elements of group work were present.
Both myself and R2 felt that absence of a discussion before the final answer makes this an NI.

Scenario d. In this group, one learner is very good with his hands and can handle all scientific apparatus very well. During group practical he is always the one who does the measurements and mixes the substances while the others watch. In the same group, a girl with very good hand writing does all the writing, and reporting.
Comments: A majority decision tending towards NI. R2, R4 and myself placed this as NI as we felt that roles should be rotated and all members in the group must contribute.
R1 even though indicating it as NI/I seems not so far from the majority as he reasons that the scenario is individual not group work as it encourages laziness on others.
R3 felt this scenario to be I. He felt that every member of the group should have specific tasks to perform based on their strengths.

Decision Taken
In this category, there was a general agreement (in some cases majority agreement) among all the respondents and as such all the

scenarios under this category were left as they are in the final instrument.

COMPOSITION OF GROUPS:

Responses of professional colleagues

Table 2.5.4: Validation of scenarios under the category of composition of groups

SCENARIO	NI	I	NI/I	DECISION	EXPECTED ANSWER
a.	2	1	2	SD	NI/I
b.	-	2	3	MD	NI/I
c.	-	5	-	FA	I
d.	1	1	3	MD	NI/I

Scenario a: A teacher at the beginning of the year decides to arrange his group according to gender, boys in one group and girls in another.

Comments: Two of us had this scenario as NI. R1 and myself felt that there should be no discrimination of groups by either sex or ability. The view held by R4 was that the scenario was an I as she feels that the 'who' in the group do not matter, what is important is the negotiation/discussion that can take place in the group. R4 is a lower primary lecturer, and at that level she says they prefer them in their gender groups.

Both R2 and R3 placed the scenario as NI/I ,as they both felt that depending on the situation, it may be beneficial to have gender specific groups.

Scenario b. Another teacher makes up his group on a daily basis, so that on each particular day when there is group work to be done, he makes up new groups.
Comments: A majority decision tending towards NI/I. R1, R2 and myself all placed this as NI/I. R3 and R4 had it as I. To R3 the fact that there is flexibility makes this an I, while to R4, the 'who' in what group is not important as long as there is negotiation/discussion.

Scenario c. A female teacher in a missionary school makes up her group by mixing learners of mixed abilities together in a group.
Comments: There was full agreement on this scenario. So no further action was taken

Scenario d. In a class the teacher decides to be democratic in the way his/her groups are made up. He/she tells the student to get into groups of four each and proceed with the group task.
Comments: A majority decision tending towards NI/I. R2, R3 and R4 all had it as NI/I.
R1 had the scenario as NI as he felt that lazy learners might be tempted to join clever learners. To me however, I had the scenario as an I as I felt that allowing learners to group themselves will lead to a better group work as they will automatically fall into their social groups where they are more comfortable and can talk/contribute more.

Decision Taken

In this category, the respondents are in agreement in all the scenarios except for scenario (a), in which there was a split decision. It does appear that the categorisation of the scenario could be contextual as one of the respondents, R4, a lower primary lecturer indicated that at that phase, it is recommended that children be grouped according to their gender, while I and R1 an English lecturer had it as a non instance for the reason that

we do not feel that one could discriminate at the upper primary and junior secondary phase among learners based on gender. The curriculum for these phases encourages interaction and preaches equality amongst learners. The contextual nature of the scenario is further buttressed by the choice of R3 and R4.
it became clear that the disagreement among the respondents could be due to the contextual nature of the scenario that is different respondents responded based on their educational background and training.
This scenario will be discussed further in the validation based on literature findings.

ACCOUNTABILITY DURING GROUP WORK:

Responses of professional colleagues

Table 2.5.5: Validation of scenarios under the category of accountability during group work

SCENARIO	NI	I	NI/I	DECISION	EXPECTED ANSWER
a.	5	-	-	FA	NI
b.	3	2	-	MD	NI
c.	1	3	1	MD	I
d.	1	1	3	MD	NI/I

Scenario a. A teacher noticed that only one learner is doing all the work in the group, while the others just sit and talk about something else. He allows this to go on and at the end of the task all the learners in that group are graded the same.

Comments: There was full agreement on this scenario. So no further action was taken

Scenario b. As a check to see if all learners took part in the group task, the teacher decides before awarding grades to ask each learner to describe his/her contribution during the group work and awards grades accordingly.
Comments: A majority decision tending towards NI. R1, R2 and R4 had this scenario as an NI. Both R1 and R2 reasoned that since the task is a group task, there is no need to look at how much each individual contributed. However if this is the case, then how do we ensure that all learners are participating equally in the group task? Will we not end up with a situation where the clever ones do all the work and the weak ones just sit? Even though R4 had this scenario as NI, her reason that the grades should be based on individual contribution suggests that she actually thought of the scenario as an I.
R3 and myself had the scenario as an I as we were of the view that this practice will help ensure that each one contributes/takes part in the group task.

Scenario c. During group work, this teacher moves around the groups to see what is going on and when he/she notices a learner who is not involved in the task, the learner's grades are affected.
Comments: A majority decision tending towards I.R1, R3 and myself placed this scenario as an I. We felt that this monitoring helps ensure participation by all learners on the group task. The teacher should however speak to the learner(s) not participating. R4 had this as NI but according to her the grades should be based on each person's contribution. This again suggests that she actually intended to place this scenario as an I as it does exactly what she proposes.

For R2 this would have been an I, but for the fact that sometimes the teacher might not see the person's contribution and as such he places this scenario as NI/I.

Scenario d. A teacher decides to make use of peer ranking to see the extent to which each learner cooperated and worked well in the group. He/she had learners rank each other on a scale of 1-5, and uses this ranking to award the final grading for each member of the group.

Comments: A majority decision tending towards NI/I. R1 had this scenario as NI as he felt that learner relationships will affect the grades they awarded to each other.

R4 however thought that this was an I as she felt that this method could be useful if employed properly. So it means that her placement is conditional (contextual).

R2, R3 and myself had it as a contextual scenario and placed it as NI/I. We all felt that learner's relationship could bias the grades they award one another, but that if this could be countered, then it is a good practice.

Decision Taken

Even though there was a majority agreement amongst the respondents in all the scenarios under this category, scenario (C) was rephrased to include the teacher helping the learners during group work rather than just penalising them. All other scenarios in this category were left as they are.

PURPOSE OF GROUP WORK:

Responses of professional colleagues

Table 2.5.6: Validation of scenarios under the category of purpose of group work

SCENARIO	NI	I	NI/I	DECISION	EXPECTED ANSWER
a.	3	1	1	MD	NI
b.	-	4	1	MA	I
c.	4	1	-	MA	NI
d.	1	2	2	SD	NI/I

Scenario a. As a way to cover the syllabus quickly, this teacher decides to teach all the topics in his syllabus by way of group work.

Comments: The majority including ,myself had this scenario as N1. R1 had it as I since he felt that group work facilitates the coverage of the syllabus. This of course is not the aim of group work.

R4 had a contextual reason in that she felt that group work can be used but not at the expense of understanding.

Scenario b. A teacher wants his/her learners to discuss and engage themselves more during class instruction in physical science. He/she decides to make use of group work and have the learners report back their findings to the class, to encourage more dialogue, he/she decides to reward questions from the other learners by giving them an extra mark for each question asked.

Comments: The majority, myself included seem to agree on this scenario as I. In the case of R2, this scenario is an NI/I, as even though the strategy employed is a good group work strategy, the

fact that some learners might not be confident enough to ask questions makes it NI.

Scenario c. During the group work, the class becomes very noisy and almost uncontrollable. The principal on his walk around the classes observed this and when he questioned the teacher, he/she said that the learners are doing group work and they have to discuss and exchange ideas, which they cannot do silently.
Comments: Majority agreement, except for myself as I placed it as I. I felt that the discussion might have led to the noise, even though I also felt that the discussion in the class should not be too loud as to interfere with other classes. Again a matter of what can be tolerated/considered as noise or useful discussion. We all agreed however that there should be control.

Scenario d. One learner in a group has a speech impediment and whenever he speaks, the other learners laugh at him. As a result, this learner is withdrawn and quiet during group work. The teacher decides to intervene and tells this learner to move to a group of his choice.
Comments: R1 and R4 had this scenario as NI/I. In the case of R4 she is not sure of where the scenario belongs. While to R1 the choice is influenced by the context.
The Mathematics lecturer, a strict disciplinarian had it as NI and felt that the learners should be reprimanded
Both myself and R3 felt this was an I and are in agreement with the action of moving the learner to a group of his choice, where he is more comfortable

Decision Taken

Except for scenario (d), there was agreement among all the respondents on the other scenarios (a, b and c).
In scenario (d), it does seem as if with two respondents R1 and R4 placing the scenario as NI/I, the differences could be due to

the contextual nature of the scenario i.e. to punish the act by the learners and then move the learner to another group (R2) or to just solve the problem by moving the learner to another group and do nothing about the act, (R3 and myself).

I then designed an analysis scheme below to compare the way the respondents responded per category.

Table 2.5.7: A summary of the responses showing the degree of agreement/disagreement between professional colleagues and myself

CATEGORY	Scenario	NI	I	NI/I	DECISION	Majority agreement
Nature of group work	a.	4	0	1	MA	**75%**
	b.?	**2**	**2**	**1**	**SD**	
	c.	0	4	1	MA	
	d.	1	4	0	MA	
Teachers' role during group work	a.	0	5	0	**FA**	**100%**
	b.	1	3	1	MD	
	c.	5	0	0	**FA**	
	d.	3	1	1	MD	
Learners' role during group work	a.	4	0	1	MA	**100%**
	b.	0	5	0	**FA**	
	c.	2	3	0	MD	
	d.	3	1	1	MD	
Composition of groups	a.?	**2**	**1**	**2**	**SD**	**75%**
	b.	O	2	3	MD	
	c.	0	5	0	**FA**	
	d.	1	1	3	MD	
Accountability during group work	a.	5	0	0	**FA**	**100%**
	b.	3	2	0	MD	
	c.	1	3	1	MD	
	d.	1	1	3	MD	
Purpose of group work	a.	3	1	1	MD	**75%**
	b.	0	4	1	MA	
	c.	4	1	0	MA	
	d.?	**1**	**2**	**2**	**SD**	

Key:

?: Scenarios in which there is a large degree of disagreement amongst the professional colleagues and myself.

On the basis of the analysis scheme developed in table 2.5.7 above, we can conclude from table 2.2.8 that there are there were three categories of scenarios namely, teachers' role during group work; learners' role during group work as well as accountability in group work, in which there was 100% agreement between the respondents.

The same table also indicates that there were three categories namely, nature of group work; composition of groups and purpose of group work, in which 75% of the respondents are in a majority agreement, which means that there were three scenarios one each from the three different categories above, making up 25% of each of the three categories in which there was no clear majority agreement between respondents. These were scenario (b) under nature of group work; scenario (a) 'under composition of groups' and scenario (d) under the 'purpose of group work' that were labelled as having a split decision (SD).

This situation warranted that we take a closer look at the three scenarios in which there is a dispute (SD) amongst the respondents.

A further analysis was required to look at the categories and the percentage of respondents that reach an agreement on each category. In order words all decisions that were made by the majority per category were calculated in the table below.

Table 2.5.8: Summary of degree of agreement between respondents per category.

CATEGORY	FA	MA	MD	SD	% of Agreement
Nature of group work	0	3	0	1	**75**
Teachers' role during group work	2	0	2	0	**100**
Learners' role during group work	1	2	1	0	**100**
Composition of groups	1	0	2	1	**75**
Accountability during group work	1	0	3	0	**100**
Purpose of group work	0	2	1	1	**75**
Total # of Scenarios in which there was agreement/disagreement	5	7	9	3	
% of Total Scenarios and degree of agreement/disagreement	**20.83**	**29.16**	**37.50**	**12.50**	
Total	**87.50%**			**12.50%**	

If we look at table 2.2.9 above it is evident that there was a majority agreement between the respondents in 87.50% or 21 out of a total of 24 scenarios. There were only 3 (12.50%) scenarios from three different categories in which they reached a spilt decision (SD).

After obtaining the responses of colleagues, a second validation process based on literature findings was done to complement the responses of my colleagues. This stage is discussed further on the next page

2.6 Expected Student Teachers' Responses to Scenarios

Based on the results from the validation process and literature findings, we expect the responses to the scenarios from the student teachers' to be as shown in table 2.2.10 below:

Table 2.2.10 : Expected student teachers' responses to scenarios.

CATEGORY: NATURE OF GROUP WORK

Major Aspects to be Promoted by scenarios in this category

Discussion, Participation, Interaction, Task differentiation , Safety, Control and Time management.

Scenario a.

Comment Based on Literature Findings

This scenario is a non-instance of group work. The task given to the learners should be one that requires them to work together to get the solution to the task.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario does not promote interaction, one of the major aspects of group work

Scenario b.

Comment Based on Literature Findings

This scenario depending on the context can be an instance or a non-instance of group work. We expect the students to have it as either an instance or a non-instance of group work. Allowing the learners to group themselves will result in groupings that are based on friendship, friendship or gender based. This is against the recommendation of literature, which actually stipulates the opposite. At the same time the report back allows for sharing of knowledge and skills. As a result of all the different aspects that the scenario lacks and that the category considers, it was decided to leave out this scenario

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario does not focus on any of the major aspects to be promoted in this category. It does not indicate like scenario a above, any discussion by the learners, neither does it indicate if there will be a report back session, a crucial part of the group work.

Scenario c.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. This approach encourages controversy, as it is likely that the learners will attach different meanings to what they observe. This is good for group work.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario addresses the important issue of report back when learners present their findings

Scenario d.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. Empowering the learners by giving them tasks that require them find out information from around them is a good practice that helps develop their analytical skills.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario focuses on the process involved during group work; i.e. collect information and compile a report that can be presented to the class.

CATEGORY: TEACHERS' ROLE DURING GROUP WORK

Major Aspects to be Promoted by scenarios in this category

Involvement, Understanding, Clarity of instructions, Encouragement and Responsibility

Scenario a.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. This is the duty of the teacher.

Aspects Demonstrated/Not Demonstrated in this Scenario

One of the important roles of the teacher during group work is to guide and encourage learners to participate during group work. The scenario promotes this.

Scenario b.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. As long as instructions are given, then it is important that learners be encouraged to adhere to those instructions. If there were no instructions, then the learners can choose the method they prefer.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario demonstrates the importance of giving clear instructions to the learners. The scenario however does not indicate the possibility of learners being allowed to make use of alternative methods to solve the tasks.

Scenario c.

Comment Based on Literature Findings

Students are expected to respond to this scenario as a non-instance of group work. A teacher during group work must move around helping, guiding and facilitating the whole process.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario is directed at the misconception teachers have about their roles during group work.

Scenario d.

Comment Based on Literature Findings

A non-instance of group work situation that shows bad group work practice. During feedback it is the duty of the teacher to correct the learners either by having other learners do it and if they can't the teacher should do the correction.

Aspects Demonstrated/Not Demonstrated in this Scenario

While the important aspect of report back is addressed by the scenario, the scenario does not address the input that the teacher has in this process; that of summarising and clarifying any misconception that might have been made by the learners.

CATEGORY: LEARNERS' ROLE DURING GROUP WORK

Major Aspects to be Promoted by scenarios in this category

Participation, Discussion, Interaction, Sharing, Roles, Democracy, Responsibility and Procedure

Scenario a.

Comment Based on Literature Findings

A non-instance of group work indicating a bad group practice that should be discouraged. This is an example of individual group work which does not fulfill the purpose of group work-that of working together and sharing ideas to solve a common problem and by so doing learn together.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario addresses the approach used by learners who do not know how to work in a learner-centred group setting. They do not discuss and they are working individually, in other words it is an individual group work!

Scenario b.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. A case of how group work should proceed. This encourages the application of democratic principles and respect for each other's opinion, which is one aim of group work.

Aspects Demonstrated/Not Demonstrated in this Scenario

This scenario focuses on the correct approach that the learners undertake during group work that is learner-centred.

Scenario c.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. Ideally all group work should follow this format, as it is all about

sharing knowledge and skills for the common purpose of solving the task.

Aspects Demonstrated/Not Demonstrated in this Scenario

This scenario like scenario a, above fails to address the issue of discussion during group work. It mainly focuses on the individual learner i.e. allocation of tasks to individual learners, and putting the individual parts to get the group answer.

Scenario d.

Comment Based on Literature Findings

A non-instance of group work. All learners should be made to participate and those who have the skills should teach those who do not have the skills.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario is addressing the important issue of dominance by some learners during group work. It does not cover the issue of the learners sharing and helping each other to acquire skills, one of the main aims of working in groups

CATEGORY: COMPOSITION OF GROUPS

Major Aspects to be Promoted by scenarios in this category

Gender equality, Gender bias, Gender balance, Mixing, Random assignment, Familiarity, Mixed ability, Social interaction and Dominance

Scenario a.

Comment Based on Literature Findings

This scenario depending on the context can be an instance or a non-instance of group work. We expect the students to have it as either an instance or a non-instance of group work. Grouping should not discriminate based on gender, at the same time, in some situations there are advantages of working in gender specific groups like in lower primary where the learners are more comfortable working in their gender groups.

Literature on the subject of gender in groups while not completely ruling out the possibility of gender specific group, does say that the gender representative grouping is to be recommended. Since this scenario is contextual in nature, it was decided to leave it out.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario talks about gender as one of the factors that should be noted when setting up groups

Scenario b.

Comment Based on Literature Findings

This scenario depending on the context can be an instance or a non-instance of group work. We expect the students to have it as either an instance or a non-instance of group work. Making new groups daily ensures that dominance by one member of a group is eliminated.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario is not talking about who sits in which group; it is rather concerned about new groups being made on a daily basis. It therefore addresses in a way the dominance that might be associated with permanent groups.

Scenario c.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. This is what should be done. Mixed ability grouping helps ensure that learners can learn from each other.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario addresses the crucial issue of mixed ability grouping.

Scenario d.

Comment Based on Literature Findings

This scenario depending on the context can be an instance or a non-instance of group work. We expect the students to have it as either an instance or a non-instance of group work. Telling the students to group themselves will result in friendship grouping, at other times however if learners are allowed to group themselves and sit with their friends it might encourage better participation as they tend to be more comfortable in their social groups.

Aspects Demonstrated/Not Demonstrated in this Scenario

This is one scenario that tackles the most commonly used method teachers use to make groups. It ignores factors such as gender, ability etc that could affect the group process.

CATEGORY: ACCOUNTABILITY DURING GROUP WORK

Major Aspects to be Promoted by scenarios in this category

Assessment, Fairness, Grading, Verification, Responsibility, Participation and
Contribution

Scenario a.

Comment Based on Literature Findings

A non-instance of group work. It is important that during group work all learners participate actively. If this is not the case, it is the duty of the teacher to intervene and encourage other learners to participate.

Aspects Demonstrated/Not Demonstrated in this Scenario

This is a scenario that talks about responsibility of individual learners during group work.

Scenario b.

Comment Based on Literature Findings

A non-instance of group work. Some learners are not open to talking out and as such if this approach is followed they will be disadvantaged.

Aspects Demonstrated/Not Demonstrated in this Scenario

This scenario makes an attempt to ensure that each learner plays a part during group work.

Scenario c.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. This is exactly what is expected of a teacher

Aspects Demonstrated/Not Demonstrated in this Scenario

This scenario addresses the manner in which a teacher can encourage learners to get involved during group work.

Scenario d.

Comment Based on Literature Findings

This scenario depending on the context can be an instance or a non-instance of group work. We expect the students to have it as either an instance or a non-instance of group work. In some cases this is a good practice since the aspect of fairness is a crucial part of grading during group work. It is also a way for the teacher to verify if the grading he/she used was similar to that of the learners more so that not all of the group's interactions might have been noticed by the teacher.

Aspects Demonstrated/Not Demonstrated in this Scenario

This is a scenario that focuses on the controversial issue of peer ranking. Should learners be allowed to grade themselves and should such grades be recorded or should such grades be used for validation (as a check to see which learner has contributed) only.

CATEGORY: PURPOSE OF GROUP WORK

Major Aspects to be Promoted by scenarios in this category

Participation, Social interaction, Control, Process, Suitability, Counselling, Grading, Skills and Sharing

Scenario a.

Comment Based on Literature Findings

A non-instance of group work. There are topics which lend themselves to group work, and there are those topics which do not, and it is crucial for teachers to understand that the benefits of group work go beyond covering the syllabus. As an example a Science teacher teaching the topic of 'Hygiene' can make use of group work, while the same teacher will find it difficult to make use of group work when teaching the topic of 'refraction of light.

Aspects Demonstrated/Not Demonstrated in this Scenario

In this scenario the issue of suitability of group work is addressed.

Scenario b.

Comment Based on Literature Findings

This is a clear case of an instance of good group work practice. This practice encourages more learners to participate in the feedback session. This practice can also assist the teacher in identifying other areas in which students may still not have adequate understanding. It should be used with caution as learners will expect marks anytime they take part in a group task.

Aspects Demonstrated/Not Demonstrated in this Scenario

The use of reward to induce participation by learners is addressed by this scenario.

Scenario c.

Comment Based on Literature Findings

A non-instance of group work. There should be control in class during instruction.

Aspects Demonstrated/Not Demonstrated in this Scenario

The scenario tackles the issue of classroom control/management by the teacher during group work.

Scenario d.

Comment Based on Literature Findings

It is known that learners at various stages of education exhibit certain vices, which are even more noticeable when they are working in groups. It is the duty of the teacher to ensure that these vices do not lead to the intimidation of any learner in the group.

This scenario depending on the context, can be an instance or a non-instance of group work. We expect the students to have it as either an instance or a non-instance of group work. The teacher can either move the learner to another group or he can speak to the learners not to laugh at their colleague. The issue addressed by the scenario can be handled in either way, both of which are correct and will solve the problem. Therefore the scenario was removed, as even the literature on the subject does not make a clear reference about it.

Aspects Demonstrated/Not Demonstrated in this Scenario

Again the teacher is called to task in this scenario. The teacher has to inculcate in the learners acceptable behaviour used during group work

At the end of this process, I decided to drop the three scenarios in which there was a split decision by he respondents. This was done so that the students will only respond to scenarios in which the responses of the majority of the respondents during the validation were in agreement. The scenarios that were dropped

included scenario (b) under nature of group work; scenario (a) 'under composition of groups' and scenario (d) under the 'purpose of group work'.

2.7 Phase 111: Administering of scenarios

It is important to state that during the validation process, the respondents, my colleagues, were required to respond in writing to the scenarios. During the administering of the same scenarios on the subjects, however, they were required to respond to them in a semi-structured interview format. The reason for this choice of data collection method was that the interview would allow for immediate response by the subjects, but also allow the researcher to probe responses for clarity and or further input so as to collect richer data than would have been obtained if the instrument was administered in a questionnaire format.

Six student teachers from the third year of study were chosen by means of purposive/convenience sampling method. In this method, subject selection is influenced greatly by the amount of information that they can provide.
The sample was gender balanced to ensure that gender bias was eliminated.
The sampling was also based on ability, that is why the sample was composed of two high achievers, two average achievers and two low achievers selected on the basis of their performance during the year in Mathematics and Science.

Each of the subjects was interviewed for about one hour and the interviews were recorded and later on transcribed.

2.8 Data Analysis Procedure

Phase 1

Forty eight (48) free response questionnaire were given out to the subjects and only thirty eight (38) or (79%) were returned. All the questionnaires that were returned were analysed individually for recurring themes. A table was used to record the summarised response of each participant in the study. Further filtering processes occurred and involved the streamlining of these statements to fit into a common frame of categories. It is these categories that informed the design of the classroom group work-related scenarios.

The scenarios are therefore the major data gathering tools that will influence the results of this study.

In the case of the semi-structured interviews that made use of the classroom group work-related scenarios, all the interviews were taped and transcribed and the responses were tabulated and compared to obtain a majority view of what the students' perceptions were with regards to all of the scenarios

These perceptions were then compared against proven theories of group work practice.

Chapter Three

RESULTS AND DISCUSSION

In this chapter we shall present and discuss the results that were obtained from the semi-structured interviews that were conducted using the validated scenarios.

3.1: RESULTS

The table below summarises the responses to the scenario by the student teachers in terms of Instance, Non Instance and both Instance and non instance.

Key:

FA: Full Agreement (scenarios where all six students are in complete agreement)

MA: Majority Agreement (scenarios in which four out of six students are in agreement)

SD: Major Split Decision (scenarios in which the students are divided amongst three possibilities;2,2,2 or 2,1,3 or 3,0,3, in which case the differences are contextual.)

Maj.: Majority Decision

Dec.: Type of Decision

NI: Non Instance of group work

I: Instance of group work

NI/I: Both an instance or non instance of group work

Table 3.1.1: **Summary of Student Teachers' Responses to Scenario**

Category	**Scenario**	**NI**	**I**	**NI/I**	**Maj.**	**Dec.**
Nature of group work	a.	**6**	**0**	**0**	**NI**	**FA**
	b. Not included					
	c.	0	2	4	**NI/I**	MA
	d.	**2**	**3**	**1**	**I**	**SD**
Teachers' role during group work	a.	1	5	0	**I**	**MA**
	b.	4	1	1	**NI**	MA
	c.	5	0	1	**NI**	**MA**
	d.	4	1	1	**NI**	MA
Learners' role during group work	a.	5	0	1	**NI**	MA
	b.	**0**	**6**	**0**	**I**	**FA**
	c.	2	4	0	**I**	MA
	d.	6	0	0	**NI**	FA
Compositi on of groups	a. Not included					
	b.	0	5	1	**I**	MA
	c.	0	5	1	**I**	MA
	d.	4	0	2	**NI**	MA
Accountab ility during group work	a.	**6**	**0**	**0**	**NI**	**FA**
	b.	1	4	1	**I**	MA
	c.	0	5	1	**I**	MA
	d.	4	1	1	**NI**	MA
Purpose of group work	a.	**6**	**0**	**0**	**NI**	**FA**
	b.	0	4	2	**I**	MA
	c.	**6**	**0**	**0**	**NI**	**FA**
	d. Not included					

3.2: DISCUSSION OF RESULTS

The discussion below is based on the transcripts of the interviews conducted with the student. To do this we shall first of all present a summary in a tabular form, of the student teachers' responses to each scenario as either NI, I or NI/I. We shall then glean from the transcript, the main points that the student teachers' made when responding to the issues raised by each individual scenario. We will then attempt to come out with what the most common perceptions of the student teachers' are per category. The student teachers' with the correct perceptions will be identified with an asterisk (*) and these perceptions will be compared with the literature on the topic.

The complete transcript of the result can be found in appendix F. The result below is a summary from the whole transcript.

NATURE OF GROUP TASK

Scenario a

Response by students

S1 NI

S2 NI

S3 NI*

S4 NI

S5 NI

S6 NI*

Summary of Student Teachers' Perceptions

Even though all the respondents are agreed that this scenario is a non-instance, they have different reasons for this classification.

Respondents S1, S2 and S4 focussed on the grouping of learners, which is important but was not the major issue here. They failed to mention one of the most important aspects of the scenario, that is the lack of interaction between the learners and the fact that the teacher was hardly interacting with the learners either, but instead was reading from a textbook. On being probed further, on the practice of reading from the textbook, S4 did not seem to see much of a problem in the teacher reading to the class and replied that

'*the teacher can read for them, but not only reading, some words they are difficult for the learners, he can try to elaborate*". None of these student teachers raised concerns that the task does not provide for interaction between the learners.

By contrast, Respondents S3 and S6 demonstrated a better understanding of this aspect than the other three. For example, in describing why he does not think that this is a good instance of group work, S3 said:

"You see group work here should really engage learners, they should fully participate. The issue of going to the board and write some questions, and then later ask them to answer these questions, there is no conversation between the learners ---"

S6 indicated that the teacher has to give handouts on which the task is set out and the students should then discuss the handout.

Of all the interviewees, S5 showed a very poor grasp of the issue being discussed. On substantiating the reason on why his thinks this scenario does not have good aspects of group work, he said:

Yes, I say so because learners, they cannot understand questions unless that teacher writes them on the board".

Scenario c

Response by students

S1 I*

S2 NI/I

S3 NI/I

S4 NI/I

S5 NI

S6 I*

Summary of Student Teachers' Perceptions

Almost all the respondents did not focus on the nature of the task itself and failed to see the value of presenting what may be differing views for discussion in class and the fact that the groups will have more time to share and discuss their results after completing their experiment. This has good aspects of good work such as discussion and interaction, as already mentioned in the validation process. Instead the respondents were concerned if the learners are given extra time they will, according to S4

" use the experiment which is already written in the textbook, so its better if they observed in the class and then report or hand in the assignment immediately after the lesson" .

S1, S2, S3 and S4 were concerned that some learners will "forget if they report the next day".

S6 is the only student, once again, who appears to have a slightly better understanding of the nature of the task and the fact that there is need for students to discuss their group findings after class and in class the following day. In line {3.7-3.10 page 5} she states that :

" it is fine because you know science takes too long in order for learners to understand"

She later points out that the fact that different groups may come up with different findings is good,

"Some students, during experiment, they will come up with the right conclusions, some with different ones, because science differs"

Scenario d

Response by students

S1 NI

S2 NI

S3 I*

S4 NI/I

S5 I*

S6 I*

Summary of Student Teachers' Perceptions

S3, S5 and S6 correctly indicated this scenario as having good aspects of group work. S3, however, did not elaborate why he thinks so except to say that: project work is good". He bases this thinking on some of the projects he has seen in a book titled *"Tools of the Trade"* prescribed for 3rd year science student teachers in Namibia and which is also consulted regularly by other teachers. S5 felt the scenario demonstrated good aspects because "the report will come from what they (the learners) have seen from the project." He is at ease with this scenario because "in the textbooks there are not reports"- implying that students will not be able to copy from textbooks.

S6 once again demonstrated a much better understanding of the benefits of the task to the learning process when she said

" I don't think that someone can do a project in one day, for a project you need 2-3 weeks that when you understood (meaning can understand). You know a project is very difficult to do and bring back feedback and so on. You need to do research, they have to confirm their research (between themselves) which is very good and then they have to compile the report, then present it in class."

S1 was not against the task but cautioned that the project has to be such that it is not harmful and there is adequate supervision. S2 and S4 on the other hand, were concerned about differentiation so that students do not do the same projects and that all students take part and do not copy from textbooks. According to S4:

> *"One learner might do all the hunting for information and that particular learner will wrote out all the findings then he/she will just included the names of members, therefore other will just benefit without doing anything".*

S4 suggests that "they should gather information as a group but write their reports individually" to address this problem."

Overall Trends in this Category

The analysis of the student teachers' responses indicate that they are generally aware of the fact that group work can be beneficial for student learning. However, their concerns are not on the major issues of group work but more on responsibility and discipline and control, safety in tasks conducted outside the class and also the extent to which the students will produce original work and fully participate in the project. In essence they appear to be worried about whether they will be able to manage the group activities effectively. In the process, they did not consider the central issues that the scenarios attempts to raise such as discussion, participation, and interaction.

A group work task is supposed to encourage interaction and discussion amongst learners. For a group work task to satisfy

these requirements, the task has to be one that in the words of Cohen, (1994),

> 'requires resources (information, knowledge, heuristic problem solving strategy, materials and skills) that no single individual posses so that no single individual is likely to solve the problem or accomplish the task objectives without at least some input from others'

Do the group tasks in the scenarios above satisfy Cohen's standards? Or are they according to Cohen, (1994), encouraging what is known as *collaborative seatwork* (tasks done in groups which could have been accomplished by individuals working alone e.g. learning a set of spelling words) group work? Clearly scenario a and c are of that type, while scenario d, does not differ very much since we do not if the report that is compiled is not the work of one diligent individual learner.

In general though, it could be inferred that the student teachers have a fair understanding of group work and have raised legitimate concerns around task differentiation, responsibility, process, safety, control and grading, which although not major concerns are important aspects of group work.

TEACHERS' ROLE DURING GROUP WORK

Scenario a

Response by students

S1 NI

S2 I

S3 I*

S4 I

S5 I*

S6 I*

Summary of Student Teachers' Perceptions

One of the major tasks of the teacher during group work is to guide and motivate his/her learners at all times. All of the respondents except for S1 ascribed to this view and as respondent S3 puts it in {line 1.8-1.10 p6}

'...I think here the teacher realises that in one way or another learners are going out of track. And then he follows up and corrects them, and thereafter they proceed on their own.'

Respondent S1 disagreed mainly because he felt that if all of the groups are on the wrong track, then it must be the teacher's fault. Even when probed to respond to the issue which is that of the teacher helping, guiding and re-directing the learners, he still said the teacher should rather repeat the instructions from the beginning, {line 1.4-1.5 page 5} stated

'...I think the teacher should repeat the instructions three to four time so that the learners can get and know what to do'

One of the major tasks of the teacher as research has shown is to guide and help the learners during group work
Respondent S6 further buttressed the point in saying that

in {1.15-1.17}

'Here the teacher can even call one of the learners who is clever in the other groups to come and show them'.

Scenario b

Response by students

S1 NI

S2 I

S3 NI

S4 NI/I*

S5 NI*

S6 NI*

Summary of Student Teachers' Perceptions

The issue here is whether learners have to follow the instructions, they are given during group work or not. If we stick to the literal meaning of the word 'instructions' as a tool for control, then the learners will do well to adhere to the instructions. While some respondents feel that the instructions given should be followed and adhered to by the learners as exemplified by respondent S2 in {line 2.8-2.9 p6}

' ...if they don't follow the instructions which they are given, that experiment , it will not end up the way its supposed '

If however as was made clear during the interview, instructions , method and approach mean the same thing, then we may have a situation where according to (S1 and S5) that adhering to these instructions will discourage learners from using their initiative to find alternative solutions to given tasks. Respondent S5 in {line 2.3-2.5 p7} puts it as

'..., then there are many ways of solving the problem, so the learner can make their own way of solving the problem as long as they reach the solution to that problem'

Respondent S4 took a middle course and feel that it can be both ways. Sometimes the instructions can be adhered to like the case of respondent S4 in {line 2.28-2.32 p6-7}

' but It's good to follow instructions, because if you do your own you might find that you can lose the marks, because the outcome or the result could be different from other result. Maybe if you pour acid to base or if you do it vice versa, you find that instead of getting the correct one, you get the wrong one. So its better like in science its better to follow the instructions'

Adhering to instructions or not also led to the issue of product and process. Are we more concerned about the learners getting the right answer (product) or are we equally concerned about the method being followed (process)?
The respondents were again divided. While S1 felt that the instructions or method given do not have to be followed, {line 2.7 page 6}
' what would determine there is the answer they are going to give'
S2 and S3 thought otherwise and according to S3 {line 2.7-2.8}
'.. if ever they understand the instructions, they should follow the instructions, ..'

S4, spoke for the rest when he said {line 2.9-2.10 page7}
'yes what is important is the way, the way a person solves a problem and reaching of the solution'
This is the point taken by researchers, as there are multiple ways of learning, there are also different ways of doing things, however this does not take away the responsibility of the teacher giving instructions in such subjects like science where

not adhering to instructions might lead to the outcome desired not achieved.

Scenario C

Response by students

S1 NI/I*

S2 NI*

S3 NI*

S4 NI*

S5 NI*

S6 NI*

Summary of Student Teachers' Perceptions

As was stated in scenario a, it is the duty of the teacher to guide and support the learners during group work. If this is the case then all of the respondents except S1 were correct when they placed this scenario as a non-instance of group work. As a matter of fact, S4 in {line 3.1-3.3 page 8} puts this in a nutshell when she said

'..the teacher who is doing this he does not know his duties or he does not know the role what he should perform during group work'

We can therefore say that respondent S1 erred when he said in {line 3.10-3.12 page 8}

'...because if I refuse them they will think more that okay the teacher has refused okay lets try to get the answer'

S1's reasoning that refusing will make them to search for the answer themselves is the widely held belief by many teachers as to what the principles of learner centred education implies. This we know is not the case and, Respondent S4 who clearly understand what learner centred education entails captures the thinking behind this when she said in {line 4.11-4.12 p9} that

*' it does not mean so, but because it is learner-centred, so learners should find everything for themselves. You (*the teacher) *are there also to help them'*

Scenario d

Response by students

S1 I

S2 NI*

S3 NI/I

S4 NI*

S5 NI

S6 NI*

Summary of Student Teachers' Perceptions

This scenario is looking at the issue of the teacher's duties during group work, but more specifically on how the teacher should conduct the report back session. This session, which occurs at the end of the group work has a dual purpose; it provides an opportunity for each group to report back their findings to the rest of the class and therefore the possibility of learners learning from each other is very high, but it equally gives an opportunity for the teacher to make additions and corrections to support what learners have found out. In doing this, the teacher can also emphasise certain points while at the same time the teacher can correct misconceptions that might have been made.

If this is the case, then what this scenario contains is an example of bad group practice.

Respondents S2, S3 and S6 say the teacher should intervene immediately the mistakes are made, i.e. during report back and as stated by respondent S2 in {line 4.3-4.5 p8}

'... he must see to it that when a group finish reporting, after that group finish reporting, he must have comments on that group and their findings'

Respondent S6 even though agreeing that the intervention should come immediately during the report, cautioned that if

the task is for assessment purposes, then the intervention can only be made at the end of the report back process so as not to give undue advantage to the group reporting according to him in {line 4.5-4.6 p16}

' ..., If the teacher is grading, he is not allowed to stop any group to, to report back..... I think here the groups must finish'

Respondent S1 by agreeing with what the teacher does in this scenario, is placing the responsibility of learning alone on the learners. This seems to be what he meant in {line 4.4-4.6 page 10} when he said

'... when the teacher gives the grade, they are going to look for the group that got a very good grade..... They are going to see what was wrong with them then they are going to correct themselves'

Overall Trends in this Category

It is quite clear from the responses in this category that the student teachers' understand what the role of the teacher is during group work. This is further indicated by the high degree of agreement (over 60%) between the student teachers' over all of the scenarios in this category. There was also no deviation from the issues raised by the scenarios by the student teachers' in their responses.

If we take the scenario a, we can see that all of the students except for S1 are agreed that the scenario is a good example of the role of the teacher during group work. According to the theory of complex instruction, Cohen, (1994), it is the duty of the teacher as the catalyst to help the learners that get stuck or fail to function properly, in this regard when the learners do

not understand the question or have difficulty solving the task, the teacher does not provide them with answers, rather the teacher asks questions that gets the group back on track. This is exactly what the teacher has done in this scenario. In the same way the students were quite clear on what the function of the teacher should be if she is to teach in a learner centred way.

Cooperative group work researchers such as Johnson and Johnson,(1984), Cohen, (1986), Slavin, (1990) all stated that it is the duty of the teacher to amongst others guide/facilitate group work. In doing so, the teacher has to move around observing, redirecting and encouraging learners towards the completion of the task. Scenario c exemplifies the myth held by most teachers- that during group work, the learners have to see for themselves. This fortunately is contrary to the view held by all of the student teachers'.

It was also clear that the student teachers' know how the report back session should be conducted as evident from their responses. In the complex instruction model, Cohen, (1994), as well as the learning together system, Johnson and Johnson, (1987), the teacher acts as the evaluator of the final group work product. In this role, the teacher is expected to respond to learners' behaviour both during the group work as well as during the presentation. The teacher has to correct misconceptions and also add on to what has been presented. The teacher also has to ensure that the feedback is concrete and based on what has been observed.

Overall therefore, we can conclude that the perceptions of the student teachers in this category agrees with what has been found in literature on cooperative learning and group work.

LEARNERS' ROLE DURING GROUP WORK

Scenario a

Response by students

S1 NI*

S2 NI*

S3 NI/I*

S4 NI*

S5 NI*

S6 NI*

Summary of Student Teachers' Perceptions

The main issue here is the procedure the learners take to arrive at the group answer. The scenario excludes the possibility of discussion and sharing of information amongst the learners, rather it places more weight on the democratic nature of the process the learners were involved in.

All of the respondents are agreed on the method by which the final group answer is arrived at. They all concurred with the statement made by respondent S1 that the final answer should be arrived at by negotiated discussions and as stated by respondent S1 in {line 1.1-1.3 p11}

'...group work means every learner must involve, there must be a dialogue, or a discussion in group with all the learners interaction'

The issue of the answer being decided democratically does not seem to sway respondents as they see this as not a good practice that can be used in group work. They feel that democracy can only come into play if there is discussion. S4 puts it nicely when she said in {line 1.5-1.8 page 10}

'...we in most cases we go for majority, but we can go for majority with wrong answers....whether the answer is correct or wrong, you must discuss it'

Scenario b

Response by students

S1 I*

S2 I*

S3 I*

S4 I*

S5 I*

S6 I*

Summary of Student Teachers' Perceptions

This scenario again addresses the issue of group procedure as well as what learners are supposed to do, and unlike the previous scenario, it makes mention of words such as discussion, contribution, acceptance and roles, all of which were initially identified as aspects that will be promoted in the scenario.

The respondents all seem to understand what these procedures should be and they all concurred that this scenario is an example of good group work practice. If we look at S2 and S3 we can see that they refer to these procedures, S3 in {line 2.10-2.13 page 12}

'... He calls upon each learner to give his view.....and then they discuss the problem until they reach a consensus, a solution...'

It is in the process of this discussion that all the respondent's see the necessity of having roles assigned to the learners that will guide and moderate the group discussions, so that the discussion is orderly, productive and democratic. According to respondent S5 in {line 2.10-2.14 page 13}

' ...a group must have a leader who controls the group....sometimes you find that this person wants to dominate the group....'

Scenario c

Response by students

S1 NI*

S2 NI*

S3 I

S4 I

S5 I

S6 I

Summary of Student Teachers' Perceptions

We again are faced with a scenario which makes no mention of discussion and sharing of ideas, but rather refers to individual responsibility and roles which were also part of the expected aspects that are promoted in the category. This has led to the division between the respondents, who decided to look at one aspect and ignore the other aspects. If we consider both S1 and S2 who had the scenario as NI, one can see that they looked at the allocation of tasks by the leader to individual learners and see this as not a good group practice. S2 {line 3.3-3.7 page 12}

'...it can be that the section that you are given is too difficult for you and you cannot understand that thing....I think he must just open these sections to everyone to give his own idea...'

Respondents S1 and S2 feel quite strongly that since the task is a group work task, all members of the group should solve the task together and individual learners should not be given parts of the task to solve. As S2 said other learners will only understand the question when someone in the same group gives an idea first. In other words the learners in the group by sharing ideas enrich each others knowledge.

Other respondents such as S3, S4, S5 and S6 however feel that it is quite okay to break the group task into smaller parts and allot these smaller parts of the tasks to individual group members to solve. Respondent S3 puts it in brief when he said in {line 3.4-3.5 p13{ that

'..., the group leader right from the start he allocates tasks, I mean he allocates tasks, problems to each member of the group'

By allocating tasks to individual members S4 and S5 feel that time will be saved. Time however is not an issue here, as the scenario does not indicate a time limitation.

Scenario d

Response by students

S1 NI

S2 NI

S3 NI

S4 NI

S5 NI

S6 NI

Summary of Student Teachers' Perceptions

The scenario addresses the issue of dominance by one member of the group. S3 captured this in {line 4.8-4.10 page 15}
'..a person should not dominate...I think the teacher should encourage even people who doesn't know to be fully engaged. I think the people who know should be there as guidance to help these other friends'

All the students are agreed here that this is a non-instance of group work. During group work, learners should learn from each other. Respondent S2 {line 4.1-4.7 page 12} said
'its not that when you are good at handling apparatus and so what, so you have to teach all, to teach your friends, let me say a learner is good in handling apparatus, he has to leave for others so that they can practice also how to handle apparatus, and this one, is a girl with good hand writing, is not the one who must write all the time, because those, she must give the opportunity to those ones also, so that they can also improve their hand writing, not just leaving one person to write,
If this is not done then we will end up losing some of the benefits of working in groups, that of sharing knowledge and skills amongst the learners.

Overall Trends in this Category

This category contains scenarios that ask questions about the role learners are supposed to play during group work. For these roles to be identified there is a need to decide on what good group procedures should be.
Scenario a and scenario c both require that individual learners be given specific tasks to do as part of the general group tasks. Doing this however takes way the benefits associated with learners discussing among themselves and sharing ideas on how the task can be solved. Each learner is doing his own assigned task and does not necessarily have the benefit of other learners' ideas which might lead to a better solution. For learners to discuss the type of task must be one that requires the effort of each and everyone of them to be completed successfully, i.e. it must be a task that will require them to depend positive (interdependence) on each other's skills and knowledge to resolve it.

Since group work as a strategy is meant to empower the learners to be active participants in the learning process, it does require from the learners some amount of responsibility. The responsibility is first to themselves as learners in the same group and it is also a responsibility that they owe, both individually as well as collectively (group) to the teacher. This is the assertion that is made by kagan, 1992;

> 'that cooperative learning must at least include conditions that promote *positive interdependence* (the perception of members that they must work together to accomplish a common goal) and *individual accountability* (the performance of each group member is assessed against a standard, and members are held responsible for their contribution to achieving the goal'

During group work more emphasis has to be given to the 'collective responsibility' i.e. the group is stronger than the individual. The perceptions of the respondents, except for S3,

S4, S5 and S6, on this aspect of the category (scenario c), implies that even if tasks have to be assigned to individuals, it is important to ensure that discussing and sharing ideas among the groups about their findings must be the main process and not the solution of the individual task. This is what research recommends as we have seen above. To the majority of the students, however, assigning the tasks to individual learners will save on time!

The perceptions of the student teachers as regards scenario b and scenario d tally with literature findings. Both Scenarios sheds light on the right procedure to be followed during group work i.e. discussing and sharing ideas between learners. In the student team learning model proposed by Slavin, (1990), learners are required to help each other master material presented by the teacher, discussing, arguing, teaching, explaining and elaborating. If this is the case then in a cooperative learning model, the learner who is able, should to help (teach) those learners who are not so able to handle the equipment.

Even though the student teachers' called for roles for learners mainly for control purposes, researchers such as Johnson and Johnson,(1991), and Cohen, (1994), recommended increasing positive interdependence and participation by assigning specific roles to group members (e.g. facilitator, reporter).

COMPOSITION OF GROUPS

Scenario b

Response by students

S1 NI/I

S2 I*

S3 I*

S4 I*

S5 I*

S6 I*

Summary of Student Teachers' Perceptions

The scenario looks at grouping done on a daily basis or done on a permanent basis. It does not make any reference to the topic being covered as indicated by S1 in

All respondents except for S1 had this scenario as an instance of group work. Respondent S1 had it as NI/I as he stated on {line 2.1-2.4 page 14}

'it depends on the topic group work depends o the topic, lets say you are doing the decomposition,...you are doing electrolysis lets say and you did for three days you are dealing with one topic, you cannot change groups when they are doing the same group because you are going to confuse them.'

All the other respondents felt that changing the group composition on a daily basis eliminates dominance by any one learner and leads to greater socialisation and interaction amongst the learners. Respondent S3 in {*line 2.10-2.12 page 19}*

'It is acceptable, and it will also develop familiarisation within the class, whereby each learner is entitled to know every learner in the class'

Scenario c

Response by students

S1 NI/I

S2 I*

S3 I*

S4 I*

S5 I*

S6 I*

Summary of Student Teachers' Perceptions

This scenario focuses on grouping based on the learners' abilities.

Five of the respondents see this scenario as a good way of grouping learners for group work. They feel that this will lead to sharing of ideas as well as the more able learners being able to help the less able ones as S2 stated in {line 3.7-3.9 page 18}

'..now by mixing them, those ones who are brilliant will be helping those ones who are, who are slow in learning'

Respondent S1 on the other hand felt that the scenario could be termed as having elements of good as well as not good group practice. He concedes that mixing the learners might result in the brilliant ones helping the weak one. He also however is concerned about the intelligent learners contributing more than the less intelligent learners, as he said on {line 3.8-3.11 page 16 }

'if he mixes those intelligent ones, they will give more views to the those who doesn't know, and in other topics again it might happen that those who doesn't know will know more than those who know the first one, it will be vice-versa, just like that'

The general perception of the student teachers as regards this scenario is that it is good to have mixed ability grouping

Scenario d

Response by students

S1 NI*

S2 NI/I*

S3 NI*

S4 NI/I*

S5 NI*

S6 NI*

Summary of Student Teachers' Perceptions

There is clearly a common perception amongst the student teachers with S1, S3, S5 and S6 all saying that the scenario does not promote good group practice as according to them the grouping should be solely decided by the teacher.
According to respondent S6 in {line 4.9 Page20}
' so that the teacher then must be the one to put them in the groups'

Respondents S2 and S4 are all of the view that the grouping could be made by the learners themselves. Respondent # 1 in {line 1.5 p2} said

' yes the learners should divide themselves in groups'

They both qualified this statement by saying that as long as the same learners do not sit in the same group all the time. Respondent S2 captures this succinctly when he said in {line 4.13-4.15 p19}

' so now the following day now I will tell them again to get into groups, I will make sure that these groups don't repeat

again, but those people they have to swap with each other not to repeat in the same group'

Regardless of their feelings as to what the scenario promotes or does not promote, all the respondents are agreed on the fact that if the grouping is left to be done by the learners then what will likely happen is that they will either go to their friends or go to join other learners who have what it takes to solve the task. According to respondent S4 in {line 2.22-2.25 p17}

'at the other hand if you let learners to form the groups on their own, you find that totally I will just go to my friend or to a person whom I know that that person can do better and then you find that the slow learners will be left on their won'

Overall Trends in this Category

The scenarios in this category refer to a very important aspect of group work, that of grouping the learners. All three scenarios talk about the various ways that the learners can be grouped. It is clear from the responses of the student teachers that they understand the factors that have to be considered when forming groups.

In scenario b we are confronted with a situation where groups are made on a daily basis. The perceptions of the student teachers' is that this is a good practice, as it will not only eliminate dominance by a few learners, using this approach will lead to a greater interaction amongst learners unlike if they are in a permanent group where they are likely to have fixed roles. This perception is in agreement with research literature which says that it is acceptable to from time to time to change group composition as this helps to avoid the

development of fixed role expectations, Cohen, (1994). There are however instances where a well settled group mix helps with the completion of the group task.

Scenario c, talks about mixed ability grouping. This is important as one of the most important reasons of having learners work in groups is so that they can share ideas and help each other. To do this, learners of mixed abilities need to be in each group. All of the student teachers' perception in this case agrees with this assertion.

Research has shown that when students of high ability work with students of low ability, both benefit. The former benefits by explaining or demonstrating difficult concepts, which he/she must understand thoroughly in order to do so, and the later benefits by seeing a concept modelled by a peer, Johnson and Johnson, (1989).

The results of the study also recognises the importance of ensuring that groupings are based on learners academic abilities. However, since group work as a strategy does not only focus on the improvement of academic abilities, but also social as well as skills ability, the inclusion of learners of different abilities (academic, social and skills) in groups should be encouraged. According to Johnson and Johnson, (1991)

> 'cooperative learning with its dual emphasis on academic and interpersonal skills appeals to teachers because it addresses and integrates seemingly diverse goals within a single approach'

Another issue that came up in this category is whether the learners can be allowed to group themselves. Research on group work recognises the problems that might arise if this is allowed to be the way of grouping. It is correct as the student teachers mentioned that if the learners are allowed to group themselves, what is likely to happen is that the groups will be

based on friendships or similar abilities. This will mitigate against the inherent benefits that might accrue if the grouping were based on different abilities. Johnson and Johnson, (1989), were of the opinion that for the first time the teacher might let the learners form the groups themselves , but that once comfort is established, the teacher should form the groups himself while ensuring that there is always a heterogeneous mix (ability, gender, race, ability etc).

However there are no hard and fast rules in setting up groups and therefore one must take the risk and do as Brandes and Ginnes (1985) suggest, tackle even the most least likely of groups. Who knows, they may even get to enjoy the experience!

ACCOUNTABILITY IN GROUP WORK

Scenario a

Response by students

S1 NI*
S2 NI*
S3 NI*
S4 NI*
S5 NI*
S6 NI*

Summary of Student Teachers' Perceptions

In this scenario we are faced with a situation of fairness in assessing group work. All the students spoke about these issues in their responses to the scenario. They all said that the grades/marks allocated to a learner should be commensurate with his/her contribution during the group task. According to respondent S6 in {line 1.9-1.11 p29}

' no, not the same grade. Because they have never, they didn't even participate. They have to participate in order for them to be given grades'

It means therefore that those learners who do not participate should not be given the same grades as those who were actively involved in the group work.

Scenario b

Response by students

S1 NI*

S2 I

S3 I

S4 I

S5 NI/I*

S6 I

Summary of Student Teachers' Perceptions

We are looking at individual responsibility as well as accountability. The view of all the student teachers' with regards to this scenario is that it is a good group practice to have the learners individually describe their contributions. These student teachers' all feel that doing so will ensure that all learners will participate since they know they will be called upon to say what part they played during the group work. Respondent S2 stated on {line 2.6-2.10 page 19} that *'I think this one is good because now he is trying to assess, to know which learners were not participating in the groups and those ones who were participating, in this way the learners will, will fear not to participate in the group, they will make sure that when they are given a tasks, they have to participate because they know at the end of the group work, the teacher will ask them questions.'*

However, S1, S3 and S5 will not make use of the description by the learners to decide on their individual grades, but the grade they will award will be a group grade as they felt this is one criteria of group work. Respondent S5 in {line 2.2-2.4 page23}

' but on grading he should not grade according to the responses, but he should grade the same because its group work'

The purpose of having them account for their part is only to allow the teacher to check and see if all learners are engaged as well as encouraging them to participate. The grade will be the same for everyone in the group. This perception is shared by S1, S3 and S5 and as S1 puts it in {line 1.10-1.12 page 21}

'..if I ask the learners randomly that means the grades I am going to give to that learner is the grade I will give the whole group'

Scenario c

Response by students

S1 NI/I*

S2 I*

S3 I*

S4 I*

S5 I*

S6 I*

Summary of Student Teachers' Perceptions

This scenario focuses at participation by the learners and the involvement of the teacher during group work to ensure such participation.

The respondents share similar perceptions on this scenario as they feel that the learners should be encouraged to participate whenever the teacher notices that they are not.

Respondent S3 in *{line 3.6-3.10 page 26}* stated that *'this is one of the roles of the teacher. He should walk around seeing to it that every learner is fully engaged. She encourages the learners to get involved. This is very, very important. Group work, learners, all learners should be in the, in the task.*

If one is not engaged, he shouldn't be penalised first, he should be encourage'

Scenario d

Response by students

S1 I

S2 NI*

S3 NI*

S4 NI*

S5 NI/I*

S6 NI*

Summary of Student Teachers' Perceptions

The issue in this scenario in a way involves accountability as well as verification of individual contribution to the group task.

All the respondents except for S1 felt that for various reasons, the teacher should be the one to award grades for group task. Respondent S6 spoke for all of them when she said in {line 4.15-4.16 p33} that

'....., it mustn't be given by the learners, the teacher himself must award marks to the learners, not the learners to grade themselves'

This opposition to grading being done by learners is anchored on the fact that the respondents except S1, feel that the learners will be biased if they are given the opportunity of grading themselves, as according to respondent S2 in {line 4.24-4.25 p23}

'..., let me say a boy wrote a letter to a girl , then the girl refuses, if that boy is given an opportunity to rank that girl he will fail that girl, just because she refuse'

Respondents S4 and S3 conceded that grading could be done by the learners if they are in a tertiary institution like the college where teachers are trained, as the purpose of such grading is to train the student teachers on how to grade their learners.
Respondent #3 in {line 4.7-4.8 p27

'... I would accept in our case here because we are training to become teachers

Overall Trends in this Category

This is one of the categories where there is clearly agreement in perceptions amongst most of the student teachers. The category addresses the issue of accountability during group work. It looks specifically at individual accountability, participation, fairness, assessment as well as verification of degree of participation and involvement by the teacher. It asks questions such as are all learners participating equally? How do we measure the degree of individual learners' participation? Do we need to measure such degree of participation at all?
What is asked in both scenario a and scenario b contrasts sharply with what is asked in scenario c. The student teachers' overall perceptions to these three scenario is that while the learners in scenario a should not be graded the same since only one learner seems to be doing most of the work, the learners in scenario b should be awarded grades based on what they describe is their perceived contribution, in scenario c, they all agree that the teacher is doing the right thing by encouraging the learner who is not participating to get involved. From this we can see that while the student teachers' are calling for everyone to get involved in the group task, if this does not happen the teacher should endeavour to make it happen.

The perception of the student teachers in this category is that individual accountability and by implication individual contribution should be considered in grading.
Researchers agree with the views held by the students in calling for a procedure that will be used to check to see if all learners are actually participating in the group task (*individual accountability),* their recommended approach is similar to that of Antil et al, (1998)who suggested that the degree of individual accountability can be checked

> 'by conducting random oral examinations (i.e. calling on one or two students to answer a question, give an explanation, or provide a demonstration). When students understand that they might be selected to represent their team, they are motivated to prepare themselves and their teammates for this possibility'

Research has also shown that the achievement outcomes of cooperative learning are greatly enhanced if there is group reward and individual accountability, Slavin, (1995), Johnson and Johnson (2000). The emphasis here is on "group reward'. It is therefore not fair that individuals in the same group get different grades based on their perceived contribution to the group task as is being proposed by the respondents. Is it not that the reason for working in groups is so that there is a team (members of the group) who put in all their collective efforts and abilities to solve the group task? When a football team wins a tournament all members of the team get the same reward (medals), sometimes of course the best player receives an additional award! The same analogy can and should be applied to assessment of group work as according to Malcolm, (1996).

> 'There must be times when every member of the team gets 'the mark' as his/her assessment for work done in the team. Why not? Is the ranking of individual students the most important outcome of assessment?'

The obvious answer is of course no!

The student team approach of Slavin, (1995),the learning together model of Johnson and Johnson (1989) as well as the group investigation model of Sharan (1990) all ascribe to the fact that the reward (grade) should be for the group as a whole rather than individual more like the sink or swim together of Johnson and Johnson, (1991). If this is done then it will encourage inter group competition rather than individual competition that will restrict the full benefits of cooperative learning from being achieved.

PURPOSE OF GROUP WORK

Scenario a

Response by students

S1 NI*
S2 NI*
S3 NI*
S4 NI*
S5 NI*
S6 NI*

Summary of Student Teachers' Perceptions

The scenario here addresses the suitability of the group work method when applied to topics.
All the students have the same response to this scenario i.e. non-instance. They all feel that it cannot be used at all times, and that its use is not synonymous to the learner-centred methodology, but rather as a tool to facilitate learning. Respondent S2 captures its essence when he said in {line 1.1-1.6 p25} that
'... they are not saying that when is learner-centred that when you use group work is eh, the quickest way of finishing the syllabus, here we are not talking of finishing the syllabus quickly we are talking of how learning is going on. It's whether the learners get what they are supposed to get or what, not just a matter of finishing the syllabus, but it's a matter of learning.

Scenario b

Response by students

S1 I*

S2 I*

S3 I*

S4 NI/I

S5 NI/I

S6 I*

Summary of Student Teachers' Perceptions

As an approach to teaching group work needs learners to participate in order for the learners to benefit. This scenario recommends giving rewards/inducement to get learners to participate.

Respondents S1, S2, S3 and S6 all had this scenario as an instance of group work, since they all feel that this strategy does encourage for more learner participation. Respondent S3 stated in {line 2.5-2.9 on page31}

'...and one of the things is that it can improve self expression. In that case if the teacher aims at encouraging students to express themselves eh during group tasks, by compensating them or either giving them extra marks. ....This will encourage learners to fully participate even in the next sessions'

Respondent S4 and S5 felt that this strategy is good, but no grades should be awarded and had the scenario as non-instance/instance of group work.

Scenario c

Response by students

S1 NI*
S2 NI*
S3 NI*
S4 NI*
S5 NI*
S6 NI*

Summary of Student Teachers' Perceptions

Can the fact that learners are working in groups be used as an excuse to allow noise making in class? In this scenario the issue of control during group work is raised.
Group work by its nature allows learners to discuss and interact amongst themselves. All of the respondents accept the fact that it is the duty of the teacher to see to it that the group work does not turn into an uncontrolled situation, but rather an interactive learning situation where learners are encouraged to discuss and share ideas on issues and problems. Respondent S3 summarises this quite well in {line 3.5-3.7 p32} when he said

'..., I don't think group work encourages learners to noise as such become uncontrollable. Once the situation in the class is out of control, this is no more group work

Overall Trends in this Category

The scenarios in this category addressed issues such as suitability of group work, use of reward and inducements to encourage more learner participation in the group tasks as well as classroom management during group work.

If we take scenario a, we can see that there is 100% agreement by the students that this scenario is a non-instance of group work. Group work should only be used if the objectives or purpose of the lesson can be achieved by that method.
In the case of scenario b, again the perception of the students is that teachers should be encouraged at all times to be innovative and make use of tried and tested strategies to increase the participation of their learners during group work. This perception is supported by literature on cooperative learning as the essential reason behind the use of this method is so that all learners can participate more if they are in smaller groups rather than the large class where some of them might be intimidated.
The teacher should ensure that there is control and learners listen to one another during group work. To be able to do this, the teacher has to ensure that learners are thought how to work in groups. Johnson and Johnson, (1991) mentions three features of cooperative learning. These features that include *promotive interaction* (group members meet face-to-face to promote one another's work), *group processing* (groups reflect on their collaborative effort and decide on ways to improve effectiveness) as well as the *development of small group skills* (teaching students the group and interpersonal skills needed to work together). The last feature that of the development of group skills is important in this regard. When learners know what is expected of them during group work, then they will be able to work in a controlled and calm atmosphere that does not disturb the other classes. The perception of the student teachers was that an uncontrolled class couldn't be an excuse for group work.

3.3: Summary of Results

This section summarises the student teachers majority response to the scenarios.

Table 3.3.1: Summary of Student Teachers' Perceptions

		Scenario			
CATEGORY	**Perceptions**	**a**	**b**	**c**	**d**
Nature of Group Work---	Student Teachers' Perceptions	NI	Out	NI/I	I
	Literature	NI		NI/I	I
Teachers' Role During Group Work	Student Teachers' Perceptions	I	NI	NI	NI
	Literature	I	NI	NI	NI
Learners' Role During Group Work	Student Teachers' Perceptions	NI	I	I	NI
	Literature	NI	I	NI	NI
Composition of Groups	Student Teachers' Perceptions	Out	I	I	NI
	Literature		I	I	NI
Accountability during Group Work	Student Teachers' Perceptions	NI	I	I	NI
	Literature	NI	NI/I	I	NI
Purpose of Group Work	Student Teachers' Perceptions	NI	I	NI	Out
	Literature	NI	I	NI	

A closer look at what the table 3.3.1 above indicates that there are two scenarios in two categories in which the student teachers differed from what is recommended by literature.

In scenario c in the category of 'learners role during group work' the majority of the student teachers thought this was a

good practice, however as already indicated under the overall trends of that scenario, it is the lack of discussion after the individuals have done their part of the task that makes this not a good group practice. The response of the students is likely to have been influenced by their belief that this is the only way in which every member of the group can be sure to have done his/her part in solving the group task.

In scenario b, under the category of 'accountability during group work, the perceptions of the student teachers' is that the scenario contains elements of good group practices. Literature on the other hand as indicated already while recommending the approach as a tool that can be used to increase learner participation during group work, goes against using that strategy as a means of deciding learners' grades.

CHAPTER FOUR
IMPLICTIONS OF THE STUDY AND CONCLUSION

4.1: Summary of Findings

A summary of the findings showing the perceptions that the majority of the student teachers' hold in each scenario is shown in table 4.1.1 below.

Table 4.1.1: Perceptions held by majority of the student teachers in each scenario

		Scenario				Comments
CATEGORY	**Perceptions**	**a**	**b**	**c**	**d**	
Nature of Group Work	Student Teachers' Perceptions	NI	Not Included	NI/I	I	All of the perceptions (majority) that the student teachers' have in all of the scenarios in this category are in agreement with what literature on the subject holds
	Literature	NI		NI/I	I	
Teachers' Role During Group Work	Student Teachers' Perceptions	I	NI	NI	NI	All of the perceptions (majority) that the student teachers' have in all of the scenarios in this category are in agreement with what literature on the subject holds.
	Literature	I	NI	NI	NI	
Learners' Role During Group Work	Student Teachers' Perceptions	NI	I	I	NI	In scenario c, the perceptions of the majority of the student teachers' differ markedly from what literature recommends. In the rest of the scenarios (a, b, and d) the perceptions of the student teachers' is the accepted one.
	Literature	NI	I	NI	NI	
Composition of Groups	Student Teachers' Perceptions	Not Included	I	I	NI	All of the perceptions (majority) that the student teachers' have in all of the scenarios in this category are in agreement with what literature on the subject holds.
	Literature		I	I	NI	

Accountability during Group Work	Student Teachers' Perceptions	NI	I	I	NI	The student teachers' perception in scenario b is different from that of literature that has this scenario as either NI or I. In the other scenarios they hold acceptable perceptions.
	Literature	NI	NI/I	I	NI	
Purpose of Group Work	Student Teachers' Perceptions	NI	I	NI	Not Included	All of the perceptions (majority) that the student teachers' have in all of the scenarios in this category are in agreement with what literature on the subject holds.
	Literature	NI	I	NI		

A closer look behind the choices the student teachers made in each scenario over all six categories shows the following:

- From the result of the study, we have been able to find out and probe the student teachers' perceptions on various aspects that are considered important in group work. This was the main aim of the study.

- In most cases, except for the two scenarios indicated in the result sections, the majority of the student teachers hold perceptions that are acceptable and in line with what is in the literature on the issue.

- It is apparent that over all six categories, the categories in which the student teachers' seem to have been more comfortable and able to associate themselves to the scenario and respond with the correct perceptions are the categories on 'teachers role during group work'; 'composition of groups' and that of the 'purpose of group work'.

- We can also conclude that there is really no one particular category in which the student teachers' were not competent enough to respond adequately in at least over 60% of the time with the correct perceptions.

- We can however almost certainly generalize that apart from scenario b under the category of 'accountability during group work'; the student teachers did not differ in their perceptions based on their gender. In the scenario mentioned above, all the female respondents (S2, S4, S6) had the scenario as an example of good group work practice (I), a position that was agreed by only one of the three males (S1, S3, S5). None of the other scenarios in all of the categories were there perceptions that differed based on gender.

- In the same way we can also say that the results of the study did not indicate any difference of perception that can be tied down to the difference in abilities of the student teachers'.

- One of the major achievements of the study is that of finding answers to the research question. In addition, one very crucial achievement of the study is that, we were able to compare the student teachers perceptions with what is found in literature and in most cases, these perceptions for the majority of the participants in the study, were the correct perceptions to hold.

4.2 Implication of the Findings

Earlier on in chapter two, we indicated that the results of this study will allow us to design/develop strategies (maybe materials) that will lead to the student teachers' having a better understanding on what group work is. By so doing we felt, the student teachers' will then be able to employ this method more effectively in their classes when they graduate from the college. As the result of the study has indicated, in most cases and in the aspects that we tested, the student teachers' do have acceptable perceptions. If we are to extrapolate from this therefore we can say that the science student teachers' at the Caprivi College of education should be able to handle group work in their classes effectively. As we have already discussed in the introduction, this is not the case. What is evident now is that even though the student teachers' have the correct perceptions, in their practice, this is not evident.

4.3 Limitations of the Study and the Challenges I encountered

This research has shown how difficult it is to find suitable instruments to measure perceptions. The interview was the main data gathering tool, and as a result it was not an easy task to probe for all the perceptions that the students hold. In some cases more probing could have been done so that we could have avoided the students just dwelling on only one aspect of the scenarios, while in other cases, the respondents did not seem to understand what the scenario refers to.

In the case of the scenarios it was not easy to develop scenarios that contained all of the aspects considered as important from literature. This became evident during the interview when we had to re-phrase scenarios so that the aspects to be considered can be seen by the students.

In the case of individual scenarios, particularly the scenario on nature of group work, we should have included actual examples of group tasks. This however was beyond the scope of the study.

In hindsight, we could also have limited the number of categories and by so doing be able to probe more in depth.

4.4: Suggestions for Further Study

With all research, there is always the need to make suggestions that will allow for a better result to be obtained next time someone does a similar study.

In this case, we suggest firstly, that the number of categories that will be used to generate the scenarios should be limited and that an in depth piloting and interviewing be done on one of these categories.

Secondly, when scenarios are developed for the category, *nature of group work,* they should include examples of tasks that can promote discussion and those which are unlikely to promote discussion.

Thirdly, a few scenarios should also be developed which can incorporate all good aspects of group work drawn from different categories (including real examples of tasks) and those with all bad aspects from all categories as well as those including a mixture of good and bad and then conduct an in depth interview.

CHAPTER FIVE

Conclusion

Has the basic research question of this study which was 'what the perceptions of third year Science students teachers at the Caprivi College of Education were as regards group work' been answered?

The answer will be yes. What has come out even more is that even though the perceptions of the student teachers' in most cases is in line with current literature, the practice as we have said earlier is the opposite. In other words students do not seem to practice what they believe in (perceptions) when they teach using group work during teaching practice. In her seminal discussion "learner-centred education equal to group work: Findings from Namibian classrooms" van Graan, 1998, found out that:

> 'few of the observed group activities reflected real cooperative learning where there was an authentic sharing of knowledge or support of one another in learning. In most of the observations learners worked individually whenever there was an opportunity, for instance when they were not observed'

Research has shown Antil et al,(1998), Hewson and Hewson, (1989); Bentley & Watts, (1992), Johnson & Johnson, (1991 that even though the number of teachers that employ group work in their classroom has increased rapidly, the approach to group work that is used by these practicing teachers differs markedly from what research and experts in the field of cooperative learning propose. According to Rich, (1990) as quoted in Antil et al,(1998).

> 'teachers receptivity to cooperative learning depends on the weight they give to social outcomes and on their perceptions of cooperative learning's efficacy for those outcomes'

This study confirms that this assumption can apply to student teachers.

REFERENCES

ANGULA, N. (1999). Education for All: The Namibian Experience. Democratic Teacher Education Reform in Africa. Westview Press.

LORSBACH, A. & TOBIN, K. (1992).Constructivism as a Referent for Science Teaching.
Retrieved from the World Wide Web, 19th September 2002.
http://www.astc.org/resource/educator/construc.htm

ANTIL, L. JENKINS, J. & WAYNE S. (1998). Cooperative learning: Prevalence, conceptualisation and the Relation Between Research and Practice. *American Educational Research Journal, fall 1998, 35(3): 419-454*

AVENSTRUP, R. (1997). Teacher Education in Namibia 130 years. *Journal for Educational Reform in Namibia, 1997, (5): 29-31*

BENNETT, J., ROLLNICK, M., GREEN, G., and WHITE, M. (2001) The Development and Use of an instrument to assess students' attitude to the study of Chemistry. International Journal of Science Education. 23,833-845.

BENTLEY, D. & WATTS M. 1992. Communication in School Science: Groups, Tasks and Problem Solving. The Falmer Press

BORG, W. GALL, J. and GALL,M. (1993). Applying Educational Research: A Practical guide. Longman Publishers.

BRANDES, D & GINNES, P. (1985). A Guide to Student-Centred Learning, Oxford, Basil and Blackwell.

BRODIE, K. (1998) Teacher or Learner - Centred: How do Mathematics Teachers in South Africa Teach? *Proceedings of the 6th Annual Conference of the Southern African Association for Research in Mathematics and Science Education (SAARMSE).* University of South Africa, Pretoria. 85-92

COBB, P. (1994). Where is the Mind? Constructivist and Sociocultural Perspective on Mathematic Development. *Educational Researcher,* 23(7), 13-20

COHEN, E. (1986). Designing group work: Strategies for the heterogeneous classroom. New York: Teachers College Press.

COHEN, E. (1994). Restructuring the Classroom: Conditions for productive small groups. *Review of Educational Research, 64(1), 1-35.*

DAHLSTROM, L. (1995). Teacher Education for Independent Namibia: From Liberation Struggle to a National Agenda. *Journal of Education for Teaching, 1995, 21(3)*

DAHLSTROM, L. (1999).Democratic Teacher Education Reform in Africa: The Case of Namibia. Westview Press.47-60

DEUTSCH, M. (1962). Cooperation and Trust: Some theoretical notes. In M.R. (Ed.), *Nebraska Symposium on Motivation, 275-319.* Lincoln, NE: University of Nebraska Press.

De ZEEUW, G. (2001). Constructivism: A 'Next' Area of Scientific Development? *Foundations of Science Special Issue on 'The Impact of Radical Constructivism on Science' vol. 6, no. 1-3:77-98.*

DU-PLESSIS, J. (1995). A Guide to Teaching Integrated Natural Science in Namibian Colleges of Education. Ministry of Basic Education and Culture

DYE, J. SCHATZ, I. ROSENBERG, B & COLEMAN, S (2000). The Constant Comparison Method: A Kaleidoscope of data. Retrieved from the World Wide Web, 19th May 2000. http://www.nova.edu/ssss/QR/QR4-1/dye.html

GLASS, R. & PUTNAM, J. (1988). Cooperative Learning in Teacher Education: A Case Study. *Action in Teacher Education, 1998-89, 10(4): 47-52*

GOODLAD, J. (1994). A Place Called School: Prospects for the Future. New York, Teachers College Press.

HAND, B. TREAGUST, D. & VANCE, K. (1997). Students Perceptions of the Social Classroom. *Science Education, Sept. 1997, 81(4): 561-575*

HEYLIGHEN, F. (1993). Selection Criteria for the Evolution of Knowledge. *13th International Congress on Cybernetics. Association Internationale de Cybernetique, Namur, P 529.*

HEWSON, P & HEWSON, M. (1989). Analysis and Use of a Task for Identifying Conceptions of Teaching Science. *Journal of Education and Teaching, 1989, 15(3): 191-208*

JOHNSON, D. & JOHNSON, R. (1981).Effects of Cooperative and Individualistic Learning Experiences on Inter - Ethnic Interaction. *Journal of Educational Psychology,73(3):, 444-449.*

JOHNSON, D. & JOHNSON, R. (1986). Mainstreaming and Cooperative Learning Strategies. *Exceptional Children, 52, 553-561*

JOHNSON, D. & JOHNSON, R. (1987). Learning Together and Learning Alone: Cooperative, Competitive and Individualistic Learning. (2nd ed.). Boston: Allyn & Bacon.

JOHNSON AND JOHNSON, (1989). Cooperation and Competition: Theory and Research. Edina, MN: Interaction Book Company.

JOHNSON & JOHNSON, R. (1991).Implementing Cooperative Learning. *Contemporary Education Journal, 63(3): 173-180.*

JOHNSON, D. & JOHNSON, R. (2000). Cooperative Learning and Social Interdependence Theory.

JOHNSON, D. JOHNSON, R. & MARUYAMA, G. (1983). Interdependence and Interpersonal Attraction among Heterogeneous and Homogeneous Individuals: Theoretical Formulation and a Meta Analysis of Research. *Review of Educational Research, 53, 5-54.*

JOHNSON, D. JOHNSON, R. & SKON, L. (1980). Effects of Cooperative, Competitive and Individualistic Conditions on Children's Problem Solving Performance. *American Educational Research journal, 17(1): 83-93.*

JOHNSON, D. JOHNSON, R. & STANNE, (1999). Cooperative Learning Methods: A Meta-Analysis. *The cooperative Newsletter.* Retrieved from the World Wide Web, 29th May 2000. http://www.clcrc.com/pages/cl-methods.html

JONASSEN, D. (1992a). Objectivism versus Constructivism: Do we need a new philosophical paradigm? *Educational Technology Research and Development, 39(3), 5-14.*

JULES, V. (1992). Cooperative Learning: Students Perceptions of the Changing Structure of Learning. *Contemporary Education, Sept. 1992, (63)3: 191-194*

KAGAN, S. (1992). The Structural Approach to Cooperative Learning. *Educational Leadership, 47(4), 12-15.*

LEW, M. MESCH, D. JOHNSON & JOHNSON, (1986). Components of Cooperative Learning: Effects of Collaborative Skills and Academic Group Contingencies on Achievement and Mainstreaming. *Contemporary Educational Psychology, 115: 31-43.*

LINCOLN, Y & GUBA, E. (1985). Naturalistic Inquiry. Newbury Park, California: SAGE Publication.

MALCOLM, C. (1996). Making Group Work. a publication of the RADMASTE Centre, University of the Witwatersrand. Johannesburg, South Africa.

MADDUX, D., JOHNSON, D., & WILLIS, W. (1997). Educational Computing: Learning with Tomorrow's Technologies. Boston: Allyn & Bacon.

MAYKUT, P. & MOREHOUSE, R. (1994). Beginning Qualitative Research: A Philosophical Guide. London: The Falmer Press.

MESCH, D. JOHNSON, D. & JOHNSON, R. (1993). Impact of Positive Interdependence and Academic Group Contingencies on Achievement. *Journal of Psychology, 120(4 :323-334.*

MESSICH & BREWER, (1983). The Impact of Cooperative Learning. Retrieved from the World
Wide Web, 29th May 2000. http://www.clcrc.com/pages/SIT.html

MINISTRY OF BASIC EDUCATION & MINISTRY OF HIGHER EDUCATION, (1998). Broad Curriculum for the Basic Education Teacher's Diploma, NIED, Okahandja.

MINISTRY OF EDUCATION, (1993). Towards Education for All: A Brief for Education and Training. Gamsberg MacMillan Publishers.

MINISTRY OF EDUCATION, (1990). Change with Continuity: Education Reform Directive.

MINISTRY OF EDUCATION, (1992). Basic Education Reform in Namibia- A Framework for Nation building to the year 2000 and Beyond.

MINISTRY OF EDUCATION, (1993). Towards Education for All: A Development Brief for Education, Culture and Training.

MINISTRY OF EDUCATION, (1991). The National Integrated Education System for Emergent Namibia.

OSBORNE, R.J. & GILBERT, J.K. (1980). A Method for Investigating Concept Understanding in Science. *European Journal of Science Education, 2(3), 311-321.*

PENLINGTON, T. & STOKER, J. (1998). Key Teachers Perceptions of Cooperative Learning and Group Work. *Proceedings of the 6th Annual Conference of the Southern African Association for Research in Mathematics and Science Education (SAARMSE).* University of South Africa, Pretoria. 368-375

PHILLIPS, D. (1995). The good, the Bad, and the Ugly: The Many faces of Constructivism. *Educational Researcher,* 24(7), 5-12.

SHARAN, S. (1990). Cooperative Learning Theory and Research. New York, Praeger

SHARAN, S. (1994). Handbook of Cooperative Learning Methods. Greenwood Press.

SKON, L. JOHNSON, D. & JOHNSON, R. (1981). Cooperative Peer Interactions versus Individual Competition and Individualistic Efforts: Effects on the Acquisition of Cognitive Reasoning Strategies. *Journal of Educational Psychology, 73(1), 83-92.*

SLAVIN, R. (1990). Cooperative Learning: Theory, Research and Practice. Allyn Bacon.

SLAVIN, R. (1995). Research on Cooperative Learning and Achievement: What We Know, What We Need to Know Retrieved from the World

Wide Web, 30th September 2001.
http://www.successforall.net/research/cooplearn.htm

SMITH, N. (1999).Improving Learning and Teaching from a Learner-centred Approach. Retrieved from the World Wide Web, 19th May 2000.
http://www.uoguelph.ca

SWARTS, P. (1999). Democratic Teacher Education Reform in Africa: The Case of Namibia. Westview Press.29-44

TALMAGE, H. and OTHERS. (1984). The Influence of Cooperative Learning Strategies on Teacher Practices, Student Perceptions of the Learning Environment, and Academic Achievement. *American Educational Research Journal, 21(1): 163-179*

TRIPLETT, N. (1897). The Dynamogenic Factors in Peacemaking and Competition. *American Journal of Psychology, 9, pp. 503-533.*

VON GLASERSFELD, E. (1984). An Introduction to Radical Constructivism. The Invented Reality. New York: W.W. Norton & Company.

VON GLASERSFELD, E. (1989).Constructivism in Education. *International Encyclopaedia of Education [suppl], pp. 162-163.*

VON GLASERSFELD, E. (1995).Radical Constructivism: A Way of Knowing and Learning. The Falmer Press- London.

VON GLASERSFELD, E. (1996). Introduction: Aspects of Constructivism: Theory, Perspective and Practice. New York Teachers. College Press

VYGOTSKY, L. (1978). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press.

WAINAINA, P. (1998). Teachers Education at Cross Roads: A challenge for Namibia. An Occasional Publication of the faculty of education, University of Namibia and the National Institute for Educational Development, 1998.

YAEGER, S. JOHNSON, D. & JOHNSON, R. (1985). Oral Discussion, Group - to Individual Transfer, and Achievement in Cooperative Learning Groups.
Journal of Educational Psychology, 77(1): 60-66.

YEOMANS, R. (1988). Making the Large Group Feel Small: Primary Teachers' Classroom Skills, *Cambridge Journal of Education*, 17,3

Appendix A

QUESTIONNAIRE ON STUDENT TEACHER'S PERCEPTION About WHAT CONSTITUTES GROUP WORK

Dear Student,

Your help is requested in completing this questionnaire. It is also guaranteed that your responses shall and will remain confidential and will only be used for the research purpose that they were designed for.

1. There are various modes of learning that are used in the learner centered pedagogy. Which of these methods do you prefer? Explain your answer.

2. What will be your choice, if you are to choose between group work and individual work? Explain your answer.

3. What do you think is the purpose of group work?

4. What benefits do you as a student derive from the use of group work by your teacher educator?

5. Who do you think should decide on the composition of the groups? Explain your answer.

6. Does it matter to you who sits in your group? Explain your answer.

7. In your opinion, what do you think should be the maximum number of students in a group? Explain your answer.

8. If you have a choice, would you prefer to sit with students of the same sex as you? Explain your answer?

9. Do you think that group work tasks should be easy or difficult? Explain your answer.

10. Do you think that group work tasks should be process driven or product driven or both? Explain your answer.

11. Can all topics in the syllabi be covered by the use of group work? Explain your answer.

12. Should all the groups be given the same tasks or not? Explain your answer.

13. In your group what role do you normally play during group work?

14. Before you start on the group tasks, what do you do in your group?

15. How is the final solution to the tasks arrived at/decided in your group?

16. Will you accept an answer which everyone in the group supports, but which you know is the wrong answer? Explain your answer.

17. Should group work tasks be assessed? Explain your answer.

18. Do you think that everyone in the group should be given the same grade? Explain your answer.

19. Must all groups arrive at the same answer? Explain your answer.

20. Must all groups follow the same approach in solving the tasks? Explain your answer.

Appendix B1: Sample answers from student's responses to open format questionnaire

Question	**Answers**
1. There are various modes of teaching that are used in the learner centred pedagogy. Which of these methods do you prefer? Explain your answer.	- Individual work because you do not rely on someone's knowledge and you are sure of your product. - I prefer discussion method, the reason is that I will share ideas with others - Both individual and group work - Group work, through group work learners are able to initiate, bring up ideas pertaining the work given - I prefer class discussion, because is where teacher can get to know how much these learners can bring out, information is shared in the whole class.
2. What will be your choice, if you are to chose between group work and individual work? Explain your answer	- Group work because is where learners share ideas and interact - Group work, knowledge is acquired from other learners and learners learn from each other - Group work as we learn together - Individual work, no cheating - Individual work so that every learner does it for himself
3. What do you think is the purpose of group work?	- It helps so that work can be completed in a short time - Interaction, sharing ideas by different group members - in order for people to share ideas and knowledge - just simply to share ideas, but it also makes learners to be inactive, few learners are contributing - to learn from one another and promote socialisation, interaction between learners - get to be friends with more learners - discuss and agree on the answer - to share ideas so that clever ones can help the slow ones - to allow learners to explain to each other
4. What benefits do you as a student derive from the use of group work by your teacher educator?	- we get knowledge, we socialise, learn some responsibility - I get knowledge of what I did not know from colleagues - I do not acquire much, but I get to brainstorm the ideas - the task is completed in a shorter time and we make friends in the process - I become lazy during group work, because sometimes I relax and depend on others

	- some group members are arrogant as I result I do not concentrate and leave them to do all the work
5. Who do you think should decide on the composition of the groups? Explain your answer.	- the teacher should decide as he knows the capabilities of each learner - the learners should decide on group work or else it will be irrelevant - the teacher should decide or else the learners will form friendship groups - the teacher should decide because he knows how much work should be covered - the teacher should decide or else learners will be in one group only - the learners should decide as they know those they can work with
6. Does it matter to you who sits in your group? Explain your answer.	- no it does not show dependence among group members - it does not matter because I am ready to work with all my classmates - it does not matter - it matters because I do not want to work with lazy students - it matters because you will find elements who do not contribute anything - no it does not matter, I accept everyone as each one can contribute
7. In your opinion what do you think should be the maximum number of students in a group> Explain your answer.	- 4 -5 learners per group in order to manage it - it can be any number - it should be 5 members so as to get ideas from each one - not exceeding 3 - it should be 5 if they are more it will be too noisy - the more members the better as they will share all the ideas
8. If you have a choice, would you prefer to sit with students of the same sex as you? Explain your answer.	- I would love anyone, I believe everyone is capable of doing something - I am ready to work with all my classmates - Sihope, Kabozu and kakambi as they are industrious - Matongela, Lyamine, Saviour and Dale, these are not arrogant - Mubusisi, Kamwi and Samabi, they are friendly
9. Do you think that group work tasks should be easy or difficult? Explain your answer.	- should be difficult for everyone to make research - it depends to the level of the students - the task must be clear and simple so that they can complete it - the teacher should explain everything

	before they start - it should be a bit difficult so that teachers can see how much theses learners know - it should be difficult because if its easy learners will lack exploratory skills
10. Do you think that group work task should be process driven, product driven or both process and product driven? Explain your answer.	- it should be both so that learners can talk and do - it should be process, in that its on going and develops skills - it should be both because some tasks that are given are difficult and they need time to complete - it should be process driven as it is learner centred - it should be both so that they can understand better - learners should do products that can be seen
11. Can all topics in the syllabus be covered by the use of group work? Explain your answer.	- sure because every group will be given a topic to present - it shouldn't be applied to all topics or else learners will not acquire other skills - no they also use other methods - if only group work, some learners will not gain anything - no some topics do not need group work
12. Should all groups be given the same tasks or not? Explain your answer.	- they should get different tasks so they are not bored - they should be given the same tasks so that we can compare those who know - they can be given the same task as their presentation will be based on language usage - they should be given different tasks to avoid copying - they should be given different tasks so that they can learn from each group - the tasks should vary in that way many things are learnt
13. In your group what role do you normally play during group work	- I am usually the leader of the group - sometimes I am secretary and once I was chairing the group - I normally contribute what is required among us - I contribute my share as I cannot be the master of everything - secretary and participant - I always contribute to answers as well as secretary - I am always a facilitator - I sometimes act as a reporter
14. Before you start on the group tasks, what	- We first decide how to solve the task

do you do in your group?	- We give each other a task to do - We normally make sure that at least all members of the group have prepared something - We often explain to each other what the task is and then give each other a task to do - everyone has to go out and carry out a research - We divide the task among ourselves - we discuss what is to be done, resources and then carry it out together - we usually share ideas how we can go about the task and then give each one a specific task to do
15. How is the final solution to the tasks arrived at/decided in your group?	- every member come to share their findings and the conclusion - we rectify our mistakes and then conclude as a group - we discuss all our answers together and we agree on one answer - we discuss all the possible answers and then chose one - we arrive at the final answer if everyone is convinced - from different ideas, best ideas are taken after these are then written down - the final answer is decided on by the group since this is a group work
16.Will you accept an answer which everyone in the group supports, but which you know is the wrong answer? Explain your answer.	- yes, but we will try to convince him that his answer is lacking something - yes as it is group task if all members agree, then I have to agree - no I will try to convince them why their answer is wrong - if they will explain why they think it is correct, I might accept the group answer - no because if I accept our marks will be affected - no I will refuse to support their answer - as we know the majority is always right, I will accept the group answer
17. Should group tasks be assessed? Explain your answer.	- yes it should be assessed if teacher is satisfied that everyone has participated - no it should not be assessed, it should just be used to see how learners can solve problems - yes it should be assessed as it is part and parcel of learning - yes it should be assessed as the learners can then see if they are right or wrong - no because others who do not participate get free marks

	- no it should only be assessed individually - yes, if not some learners will not concentrate as they know it will not concentrate as they know it will not affect them
18. Do you think that everyone in the group should be given the same grade? Explain your answer.	- yes and no. yes if they are participating and no if only some learners did the work - yes as it is group work they must get the same marks - obviously each one should be given the same grade if they have done the work, they deserve it - yes because when we were doing the task we were all contributing to the solution - yes but the group members must be asked if each one had done some work - no the marks should be awarded according to the contribution of each one
19. Must all groups arrive at the same answer? Explain your answer.	- yes if they are working on the same topic - it depends some tasks can have different answers - yes as a group eah group must have the same answer - yes, but the process can be different for example in Mathematics - not necessarily, because people have different ideas towards things - it depends on how they understand the task
20. Must all groups follow the same approach in solving the tasks? Explain your answer.	- no each group should decide on its method - what is important is not the method, but the final answer - approaches can be different so far as the task can be completed in the given time - no each group should decide how they want to work, unless if the teacher tells them to use one method - it will depend on the criteria given in solving the task - no different people have different ways of solving the task

Appendix B2: Categorisation of sample answers to open format questionnaire

LINK BETWEEN SAMPLE ANSWERS AND SCENARIOS

Scenario Category	**Sample Answers to questions**
1. Nature of group work	10, 12, 15
2. Teacher's role during group work	15, 17, 20
3. Learner's role during group work	5, 13, 14, 15
4. Composition of groups	5, 6, 7, 8
5. Accountability in group work	4, 18
6. Purpose of group work	2, 3, 4, 11

Appendix C
Scenarios before validation

Dear Respondent; below is a series of group work classroom related scenarios. For each of these scenarios you are requested to respond in one of the following ways:

1. Instance of group work (I): if you think the scenario contains elements of good group work practices and then give reasons for your choice.

2. Non Instance of group work (NI): if you think the scenario does not contain elements of good group work practice or if the scenario contains elements that could be termed as bad/negative group work practices and then give reasons for your choice

3. Both instance and Non instance of group work (I/NI) if you feel that the scenario contains elements of group work which could be said to be bad or good depending on the context, i.e. contextual elements of group work.

Nature of group work task

a. A teacher comes into the classroom and arranges his/her learners in groups of four and proceeds to read from a text book at the end of which he asks them to answer some questions that he/she wrote on the board.

b. A student teacher comes into a class and instructs his/her learners to arrange themselves in groups of four each. He then writes a set of questions on the board and tells them to answer them in their groups in the stipulated time. He collects and marks the papers and returns them to the learners.

c. A teacher places his learners in groups randomly and hands out a worksheet that is based on an experiment that they are to perform in the class. He further instructs them to write down what they observed as a group and report back their findings the next day for discussion in class.

d. A teacher sets up a project work for his learners to do out of class. Each group is required to visit an industry and carry out a survey on the environmental impact the industry has on the local environment. They are to take two weeks and compile a report that they will then have to present in class.

Teacher's role during group work

a. A teacher during group work observed that all the learners in all the groups are on the wrong track. He proceeds to redirect them so that they can see where they have gone wrong and then allows them to proceed on their own.

b. A teacher realizes that in one group the approach they are using to solve the problem is different from the approach he gave them. He goes over to the group and tells them they are wrong and that they should follow the method they were given.

c. After instructing the learners on what to do, the teacher sits down and allows the groups to carry on working. When asked by the learners for help, he refuses, saying that this is a group work, they should find the answers themselves.

d. At the end of the group work, the teacher asks the learners to report back while the class sits back and listen. A number of groups made wrong conclusions, but the teacher allows this to go on and at the end he allocates grades to each group.

Learner's role during group work

a. The teacher observed that during group work, the learners are actually working individually at the end of which they check each other's work. They then decide on a group answer by picking the answer that the majority of the learners obtain without discussion.

b. At the beginning of the group task, the group leader opens up the discussion and calls upon each learner to give his opinion/contribution/idea. This goes on for sometime until a solution that is acceptable to all the learners is obtained. The group leader tells the secretary to record this as the group answer.

c. The group leader at the beginning of the tasks allocates a section of the problem to each member of the group to solve. When this is done, each learner explains what he has done to the group and finally they all agree and combine their answers together. They then present this as the group answer.

d. In this group, one learner is very good in handling most scientific apparatus. During group practicals he is always the one who does the measurements and mixes the substances while the others watch. In the same group, a girl with very good hand writing does all the writing, and reporting.

Composition of groups

a. A teacher at the beginning of the year decides to arrange her group according to gender, boys in one group and girls in another.

b. Another teacher makes up her group on a daily basis, so that on each particular day when there is group work to be done, she makes up new groups.

c. A female teacher in a missionary school makes up her group by mixing learners of mixed abilities together in a group.

d. In a class the teacher decides to be democratic in the way his/her groups are made up. He/she tells the student to get into groups of four each and proceed with the group task.

Accountability in group work

a. A teacher noticed that only one learner is doing all the work in the group, while the others just sit and talk about something else. He allows this to go on and at the end of the task all the learners in that group are graded the same.

b. As a check to see if all learners took part in the group task, the teacher decides before awarding grades to ask each learner to describe his/her contribution during the group work and awards grades accordingly.

c. During group work, this teacher moves around the groups to see what is going on and when he/she notices a learner who is not involved in the task, the learner's grades are affected.

d. A teacher decides to make use of peer ranking to see the extent to which each learner cooperated and worked well in the group. He/she had learners rank each other on a scale of 1-5, and uses this ranking to award the final grading for each member of the group.

Purpose of group work

a. As a way to cover the syllabus quickly, this teacher decides to teach all the topics in his syllabus by way of group work.

b. A teacher wants his/her learners to discuss and engage themselves more during class instruction in physical science. He/she decides to make use of group work and have the learners report back their findings to the class, to encourage more dialogue, he/she decides to reward questions from the other learners by giving them an extra mark for each question asked.

c. During group work, the class becomes very noisy and almost uncontrollable. The principal on his walk around the classes observed this and when he questioned the teacher, he/she said that the learners are doing group work and they have to discuss and exchange ideas, which they cannot do silently.

d. One learner in a group has a speech impediment and whenever he speaks, the other learners laugh at him. As a result, this learner is withdrawn and quiet during group work. The teacher decides to intervene and tells this learner to move to a group of his choice.

Appendix D1: Response to Group work scenarios: Respondent number 1

Category	Scenario	Categorisation	Reasons
Nature of Group Task	1.	Non-Instance	This is reading method, its not group work.
	2.	Instance	This gives room for discussion and students will come out with good points.
	3.	Instance	This is group work, learners are mixed for them to exchange ideas
	4.	Instance	This is group work because the learners will discover for themselves and this method enhances good method of learning

Category	Scenario	Categorisation	Reasons
Teacher's role during group work	1.	Instance	Group work because the teacher is a facilitator and a guide
	2.	Instance	Same as above. He should guide them not to tell them the answers
	3.	Non instance	The teacher is a cheater because he is confused, the method encourages bad method of teaching. It is not a group work.
	4.	Non instance	It is not a group work, because during the report, wrong answers should be rejected and correct answers should be emphasised in the class.

Category	Scenario	Categorisation	Reasons
Learner's role during group work	1.	Non instance	It is not a grpoup work because the accepted work may be the wrong one and the ideas may be off the line
	2.	Instance	This is group work, it gives room for discussion before arriving at satisfactory idea.
	3.	Instance	This facilitates group work because each learner will report back and eventually correct ideas will be accepted.
	4.	Non instance/ Instance	This is individual not group work. It encourages laziness on others because they are not brilliant.

Category	Scenario	Categorisation	Reasons
Composition of groups	1.	Non instance	This is not a group, learners should be mixed.
	2.	Non instance/ Instance	The class will be in chaos, because of lack of class management, if it is not a proper group.
	3.	Instance	The best group arrangement because ideas will be exchanged from both brilliant and dull learners.
	4.	Non-instance	Same as the one above, students are working with mixed abilities, but the danger is that dull learners may be in the same group, likewise the brilliant ones.

Category	Scenario	Categorisation	Reasons
Accountability in group work	1.	Non instance	This is not group work because only one learner does all the work.
	2.	Non-instance	This is not group work because some learners might be scared to talk fluently in the presence of the teacher.
	3.	Instance	It is group work, the learner that is affected will participate next time.
	4.	Non instance	This is not group work, learners who are not in good terms with each other will rank themselves differently.

Category	Scenario	Categorisation	Reasons
Purpose of group work	1.	Instance	Group work facilitates fast coverage of the syllabus.
	2.	Instance	Group work is operating here because the learner will work hard and perform better.
	3.	Non-instance	Group work should be properly controlled not to be abused otherwise learning will not take place.
	4.	Non instance/ instance	This cannot solve the problem because the learner can move to the group that is lazy and he may not achieve anything in the class. Discipline should have its course during this unpleasant situation.

Appendix E: Sample Interview transcript. INTERVIEW (25/03/2000), WITH RESPONDENT NUMBER 1; A 3RD YR. MALE STUDENT TEACHER SPECIALISING IN MATHEMATICS AND SCIENCE EDUCATION AT THE CAPRIVI COLLEGE OF EDUCATION.

What constitutes group work

1. Interviewer: A teacher comes into the classroom and arranges his/her learners in groups of four and proceeds to read from a text book at the end of which he asks them to answer some questions that he/she wrote on the board.

Respondent: I think the teacher, teacher cannot put learners in groups, teacher cannot learners in group, so for a non instance

Interviewer: When you say a teacher cannot put learners in group, what do you mean, you mean he shouldn't divide them in groups in a classroom?

Respondent: Yes the learners themselves should divide themselves in groups

Interviewer: Okay, so what you are saying is the teacher should say get into your groups?

Respondent: Yes he should instruct get into groups of four,

Interviewer: Okay

Respondent: So themselves should divide themselves into those groups

Interviewer: Into those groups

Respondent: Yes

2. Interviewer: A student teacher comes into a class and instructs his/her learners to arrange themselves in groups of four each. He then writes a set of questions on the board and tells them to answer it in their groups in the stipulated time. He collects and marks the papers and returns it to the learners.

Respondent: That one I can say it's a non instance or instance, because the teacher , because that one is consuming, it takes time for learners to answer the questions afterwards the teacher again to collect and ,marking them.

Interviewer: Okay

Respondent: It takes time, so I think that learners should mark themselves after answering the questions learners should present their findings

Interviewer: So to you then this situation can be either an instance or a non instance?

Respondent: Yes

3. Interviewer: A teacher places his learners in groups randomly and hands out a worksheet that is based on an experiment that they are to perform in the class. He further instructs them to write down what they observed as a group and report back their findings the next day for discussion in class.

Respondent: That one is a absolute instance of group work

Interviewer: Ok why are you saying that?

Respondent: Because the teacher tells learners to chose themselves I mean to group themselves randomly

Interviewer: Uhm

Respondent: Yeah choosing that this one you know there are some good learners some are dull, so they should chose themselves randomly so that they make groups and after that they do the experiment and then after that they give their findings

Interviewer: Okay, so what you are saying when the teacher puts the learners randomly then you think that is a better group work?

Respondent: Yes

Interviewer: Rather than him selecting them based on their marks?

Respondent: Yes

4. Interviewer: A teacher sets up a project work for his learners to do out of class. Each group is required to visit an industry and carry out a survey on the environmental impact the industry has on the local environment. They are to take two weeks and compile a report that they will then have to present in class.

Respondent: This one is a non instance, because how can the teacher give the learners two weeks project when he is not attending that project as well.
Interviewer:

Interviewer: Uhm

Respondent: So some projects might be harmful, sometimes you know some learners misbehave

Interviewer: Okay

Respondent: Yes if they go for such project they might misbehave there

Interviewer: So what would you do then if you are such kind of teacher?

Respondent: I can, I should go with them so that I can give guidance to invigilate how they are going to or to answer the questions.