

**AN ANALYSIS OF THE FACTORS THAT INFLUENCE
THE PARTICIPATION OF SECONDARY SCHOOL
SCIENCE STUDENTS IN CLASSROOM
COMMUNICATION**

BY

**AUGUSTA MARIA MAPHUTI LEPHOLLETSE
B.A., B.ED., P.T.C.**

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SUPERVISOR:

PROF. N. J. VREKEN

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE PROBLEM

The teaching and learning of science in schools has received priority consideration by the South African education department and a recognition of its important role in the country's societal development (NRF, 2001).

Science education in South Africa is fraught with problems, which include poor comparison internationally (NRF, 2001), poor matric pass rates (Bisseker, 2001:36), and decreasing learner enrolment at tertiary education institutions (NRF, 2001). It is now recognised that the number of learners with adequate and sound knowledge and skills in maths and science need to be increased as this will increase the number of matriculants to move into higher education, business and industry (The Teacher, 2001; CASME, 1996). It is against this background that it becomes clear that science teaching and learning need urgent attention.

1.2 STATEMENT OF THE PROBLEM

Classroom communication has been recognised as having vital importance in the teaching and learning processes (cf. Gumperz, 1982; Green, 1983; Le Roux, 1990; Vreken, 1996). While science is mostly a practical and hands-on subject, learning it involves different kinds of communication, especially classroom communication where teaching and learning take place. The teacher has to present and explain the content of science in a palatable and interesting way (Wellington, 1994:175). Hodson's research on science teaching (Hodson, 1998) claims that it involves: identifying learners' ideas and views, creating opportunities for learners to explore their ideas and test their robustness in explaining phenomena, accounting for events and making

robustness in explaining phenomena, accounting for events and making predictions; providing stimuli for learners to develop, modify and, where necessary, change their ideas and views; and supporting their attempts to rethink and reconstruct their ideas and views.

Cazden (1986) and Green (1983) also maintain that the quality and quantity of the reciprocal interactive communication between learners and teachers determine the effectiveness of instruction and learning in particular as well as the actualisation of educational essentialities in general. Basset and Smythe (1979) state that a teacher's style of communication and communicative expectations of the learner's behaviour has influence on the learner's self-concept, ability, and eventually scholastic achievement. Ibid further maintain that expectations are an integral aspect of the communication process, as such, teachers' expectations which are communicated during classroom interaction affect learners' academic performance and classroom behaviour.

Wilkinson and Strauss (1989) state that the idea of Curriculum 2005 is to move away from the stereotyped teaching methods and passive learning to a learner-centred approach where learners are actively engaged in the construction of knowledge, using their own knowledge and comprehension. The Outcomes Based Education (OBE) model expects learners to acquire, at their own pace, learning outcomes and, at the same time, to construct meaning and acquire shared understanding (Fritz, 1994:79-80). Through this approach, learners must be facilitated to demonstrate outcomes as well as assisted to co-construct meaning and knowledge (Brophy & Aileman, 1991:66).

Various factors have been shown to interfere with science teaching and learning in South African schools. Research has shown that language (English as a medium of instruction and scientific language) problems can hinder learners from understanding scientific concepts and from participating fully in the classroom (Kotecha & Rutherford, 1991; Henning, 1994; Wellington, 1994; Kaunda, 1998). Communication apprehension also affects the nature of

Helms (2001) maintain that some of the problems with science education are that changes called for are difficult to put into practice, they create dilemmas for teachers, and require significant changes in teachers' values, beliefs and their teaching practices, as well as for the learners. Anderson and Helms (2001) identify a gap in science education research; they maintain that research is needed which will, amongst other things, focus on interventions into conventional school practice and focus on learner roles and learner work. In an attempt to conduct research into the practicalities of the science classroom, this research attempts to focus on factors affecting science learners' participation in classroom communication.

1.3 RESEARCH QUESTIONS

Against this background, the following questions came to the fore:

- 1.3.1 What is the nature of and the extent to which secondary school science learners participate in classroom communication?
- 1.3.2 Which factors influence the participation of secondary school science learners in classroom communication and to what extent do these factors influence them?
- 1.3.3 How can secondary school science learners' participation in classroom communication be improved (where necessary)?

1.4 RESEARCH AIM AND OBJECTIVES

The aim of this study is to investigate the participation of secondary school science learners in classroom communication.

In view of the problem questions in section 1.3, this research proposes to reach the following objectives:

1.4.1 determine the nature of and the extent to which secondary school science learners participate in classroom communication.

1.4.2 identify the factors that influence the participation of secondary school science learners in classroom communication and to determine the extent to which these factors influence them.

1.4.3 determine how secondary school science learners' participation in classroom communication can be improved (where necessary).

1.5 RESEARCH DESIGN

1.5.1 LITERATURE STUDY

Factors that influence the participation in classroom communication were determined by means of a literature study. A literature search (DIALOG SEARCH) was undertaken to survey the factors that influence learners' participation in classroom communication using the key words in 1.6.

1.5.2 EMPIRICAL RESEARCH

1.5.2.1 QUESTIONNAIRE

A questionnaire was developed and given to science learners in order to get the information needed in objectives 1.4.1 to 1.4.3 and to determine what science teachers are presently doing to improve classroom communication.

1.5.2.2 INTERVIEWS

Interviews were conducted with science teachers in order to obtain the information needed in objectives 1.4.1 to 1.4.3 and to determine what science teachers are presently doing to improve classroom communication.

1.5.2.3 RESEARCH POPULATION

Interviews were conducted with one Grade 8 science teacher from each secondary school in the Potchefstroom Circuit (N=13). The questionnaires were given to a random sample of 20 Grade 8 science learners from each teacher's class.

1.5.2.4 STATISTICAL TECHNIQUES

The statistical consultation services of the PU for CHE was consulted in the construction of the questionnaire and the selection of the appropriate statistical techniques.

1.6 PROGRAMME OF RESEARCH

The study is divided into five chapters, with each tackling a specific aspect crucial to researching the areas thereof. Chapter 1 concerns the problem statement, method of research, problem questions, aims of the study as well as definition of the key terms to be used in the study; whereas Chapter 2 deals with literature survey regarding factors that influence learners' participation in classroom communication.

In Chapter 3, literature is surveyed regarding the manners in which teachers can positively influence learners' participation in classroom communication.

Chapter 4 will be devoted to empirical research and Chapter 5 will summarise, make conclusions, and recommendations based on the findings of the study.

CHAPTER TWO

FACTORS INFLUENCING PARTICIPATION IN CLASSROOM COMMUNICATION

2.1 INTRODUCTION

The main focus of this study is on the factors that influence participation in the classroom as this is being experienced by most of the science learners in the secondary school level. Before dealing with these factors that influence classroom communication, however, it is important to outline a general view of communication as put forward by several scholars. There are many specific models of communication being identified, but for the purpose of this research, general models of communication will be considered. It is therefore, very important to put our focus on classroom communication in order to achieve the main aims of this study. It will again, be necessary to delineate a classroom communication model in detail, and to place into context all the negative factors that influence participation in classroom communication.

The skills that are effective during classroom communication (CC) and that create an effective teaching and learning situation will be highlighted by using Vreken's model for classroom communication. In this regard, the present study will be more concerned with oral or verbal communication in the classroom situation.

2.2 GENERAL OVERVIEW OF COMMUNICATION

The definitions (explanations) of communication as stated by various researchers will be considered.

Malimabe (1997:6) contends that communication is an integral part of an effective mutual understanding amongst people. To interact and convey the information is a need for successful communication.

Communication can be defined in accordance with the approach taken by Hurt, Scott and McCroskey(1978). This approach contends that communication is “any process where meaning is stimulated”.

Taken from these researchers' point of view communication is the transmitting of a message to the receiver who decodes the message by means of listening, reading, observing or reacting. Therefore, in order for communication to be understood, the sender and the receiver must both respond to the message effectively.

The difference between communication in class and communication in general will be stated since this study pays more attention to classroom communication.

2.3 DIFFERENCES BETWEEN CLASSROOM COMMUNICATION AND COMMUNICATION IN GENERAL

When people are engaged in conversations, there are a few language rules and/or formats that are usually employed (Malimabe, 1997:7). Furthermore, he states that in meetings and public speaking, a certain “format” is followed to achieve the sole purpose of developing mutual understanding amongst the parties concerned. The same is true of classroom communication in general, and also of communication in the science classroom in particular. According to Jones (2000:89), scientists use the language of science, which incorporates more than just words; they draw on a multitude of signs and symbols, including graphs, charts, diagrams and mathematical symbols and equations, as well as natural language. Thus Jones (2000:89) emphasizes that teachers need to be aware of how these signs and symbols can be instrumental in helping learners to develop scientific knowledge and understanding in the classroom.

Malimabe (1997:7) puts forward that classroom communication is interactive and should be as the teacher wants to convey and explain subject information to the learners, while at the same time awaiting feedback from the learners to test the level of understanding reached.

Communication in the classroom is discussed in the following sections, with a focus on verbal and non-verbal communication.

2.3.1 CLASSROOM COMMUNICATION

Communication in the science classroom is complex for at least two reasons. Firstly, in any classroom, communication is ruled by a number of factors which include the fact that there is a teacher-learner relationship defined by an adult-child power relationship (Lemke, 1990). The teacher has largely dominated communication in this type of relationship. Teachers usually decide what will and will not be talked about, who has the right to speak and for how long, what is the correct way to speak and to behave while speaking and listening, and what counts as legitimate knowledge, satisfactory evidence and proper argument (Hodson, 1998:102). Secondly, in the science classroom, there is the additional factor of the language of science. Hodson (1998:23) states that terms like 'reflection and refraction', 'suspension and solution', 'contraction and expansion' carry an inferential component rooted in theoretical understanding. The bottom line is that science learners do not organise knowledge around processes; they organise knowledge around ideas (Hodson, 1998:25). It is the communication of these ideas and concepts that will make for successful learning in science.

According to Hansford (1988:3) classroom communication is a process in which an individual teacher or learner either intentionally or accidentally stimulates meaning in the mind of another classroom member by means of verbal and/or non-verbal symbols and cues. It is on these kinds of communication that this section will focus on.

Verbal communication depends to a large extent on the ability of the teacher to communicate his/her message clearly, which is of great importance in effective teaching (cf. Henning, 1993). Hansford (1988:77-78) is of the opinion that verbal behaviour in the classroom is such a diverse and complex topic that it is difficult to provide an adequate summation without resorting to some broad and perhaps general statements.

Non-verbal behaviour communicates messages to receivers without the spoken word or in addition to the spoken word (Malimabe, 1997:8). Malimabe further says that when we talk with someone, any omissions or the manner in which we communicate, or our body language may be as important or even more important than that which we convey verbally. This is called non-verbal communication (Malimabe, 1997:8).

Non-verbal communication is clearly explained by Kauchak (1989:29) when he argues that this behaviour contains the following qualities among others:

- proxemics: features such as physical space and interpersonal space and interpersonal distance;
- co-verbal behaviour: gestures, facial expressions, eye gaze, directness of head, body orientation and posture;
- para-language: voice tone, rate of speech, pauses, dis-influences (um, uh, yawns) etc.

Hansford (1988:77-78) continues to make some tentative statements concerning the qualitative difference between these channels of communication. Some of these statements are as follows:

- The verbal communication emanating from teachers and learners can only take place while sounds are being uttered.

- The symbols and/or words that are used (during verbal communication) can only be used one at a time and should be arranged in a sequence that listeners would follow easily.
- Much of the verbal output by teachers and learners results from actually thinking and planning what to say.
- There is also a question of relative significance of verbal and non-verbal behaviour. The point to be made is that it is difficult, if not incorrect, to view verbal and non-verbal communication as being independent of each other (Hansford, 1988:78).

It is clear that both verbal and non-verbal communication play a prominent part in the teaching-learning situation, and both carry equal importance in facilitating effective communication in the science classroom. Jones (2000:89) emphasizes that science teachers need to be aware of how language, and thus communication, works in the classroom, to take into account the interaction between language and thought and its importance in developing learners' ideas and interpreting their beliefs.

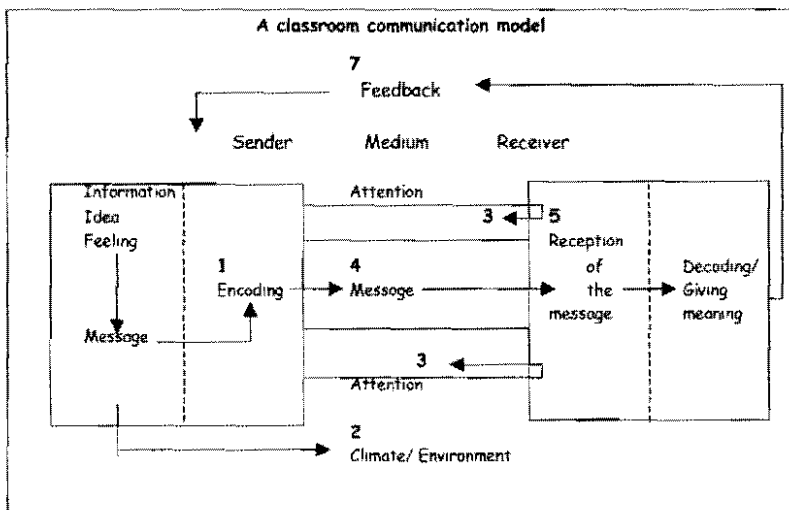
2.3.2 CLASSROOM COMMUNICATION MODEL

A communication model is a representation of a pattern which is followed when conveying messages or information (Malimabe, 1997). During teaching in the classroom, there is always a person who sends information to the receivers i.e. teacher to learners, learner to teacher, or learner to learner.

Improving the quality of our communication therefore, requires that we attend to both what we send, and how we send it, and how well we receive what others transmit to us (Malimabe, 1997:11).

According to Hansford (1988:4-5) there are different classroom communication models such as the idealistic instructional model, potential message stimuli models, and others. However, it would be better to focus on one model, which encompasses most of the components of classroom communication. Therefore, the classroom communication model of Vreken (1996) will be discussed in this study.

Figure 2.1: Vreken's classroom communication model



Vreken's model of classroom communication (1996) consists of seven different steps or facets. Vreken (1996:1) divides the task of the teacher during the classroom communication (CC) process into different functions, which will be discussed as facets in the following discussion. Each facet is discussed within the context of Outcomes Based Education (OBE), relating each to communication in the science classroom.

2.3.3 DISCUSSION OF THE DIFFERENT FACETS OF CLASSROOM COMMUNICATION AS APPLICABLE TO OBE

2.3.3.1 CODING OF THE MESSAGE (FACET 1)

The encoding of the message that the teacher wants to convey to his/her learners takes place in two steps. The first step, Vreken (1996) argues, is that the teacher must change the learning content or the information, idea, feeling, thought into a comprehensible message in his/her thoughts. The second step is then to change this message in a form or medium through which it can be conveyed to the learners.

Within the Outcomes Based Education (OBE) framework, the teacher can manage this facet of communication by gathering information that could suit the diversity in his/her class. S/he needs to take cognisance of (among others) the different languages and cultures in the class and prepare the message (lesson) accordingly (Pretonius, 1998)

Trowbridge *et al.* (2000:350) stress that science teachers must maintain a balance among the unique perspectives of individuals, common values and ideals of society, and the defining characteristics of science. Hodson (1998:6) declares that in order to ensure universal critical scientific literacy, science education in schools ought to be interesting and exciting, real, relevant and useful, non-sexist and multicultural, personally relevant and humanized, value-laden and caring. Therefore, coding of the message means that the teacher should be aware of the diversity in his classroom, and should take care to accommodate it.

2.3.3.2 CREATING A CLIMATE CONDUCIVE TO CLASSROOM COMMUNICATION (FACET 2)

The teacher's function (task) during instruction is to create a climate or environment, which is conducive to communication and learning, i.e. quite, peaceful environment. Vreken (1996) speaks of a positive psychosocial

environment, which entails the creation of a good learning climate, i.e. participation, mutual acceptance and trust between the learners and the teacher as well as a good degree of class control, order and discipline.

Within the OBE classroom situation, the teacher needs to ensure that each learner participates actively in the class partly by creating an atmosphere that ensures learning. The teacher needs to take care of both the physical and psychological aspects that enhance participation in the classroom. For example, s/he needs to paste posters and other materials on the walls of the classroom. These should reflect the different cultures and races that are represented in the class or school (Pretorius, 1998).

(Hodson, 1998:59) maintains that language, gender, colour (race), faith inclination among many other factors must be considered in creating the climate for classroom communication (Hodson, 1998:59). Ibid claims that in some instances, the concept of science seem almost incompatible with knowledge acquired by the learner through membership of other social groups.

2.3.3.3 PREPARATION OF THE LEARNER (FACET 3)

The learners must be in a good position to receive the message in a positive way. Hence it is the duty of the teacher to prepare the learner for the learning task.

Hodson (1998:55) advises that in addition to making learners feel comfortable within the classroom, teachers must also strive to make that learners feel comfortable within science itself. The teacher ought to influence the attitude of the learners to receive science teaching positively. Hodson (1998:60) claims that in learning something new, one moves away from the familiarity of and safety of the known into the uncertainty of the unknown; feelings of confusion, apprehension and loss of confidence are inevitable, even anxiety, frustration, distress and anger are possible. Teachers should be able to deal with these

feelings, by helping learners cope with these feelings. OBE provides practical solutions through which this can be achieved.

According to (Pretorius, 1998), within the OBE classroom situation, the teacher needs to ensure that each learner prepares thoroughly for subsequent classes. That is, s/he has to give them prior work to do, for instance, read/study and or prepare adequately before coming to class. As they do prior preparation, they should know before hand that each one will be given a time frame within which s/he can contribute by way of telling or discussing with other classmates what they have learnt from the studied piece of work. S/he must allow learners to ask as well as answer questions. S/he must be friendly and resourceful in facilitating learners' learning.

2.3.3.4 TRANSMITTING THE MESSAGE (FACET 4)

The clear carrying over of the message to the learners is of outmost importance during this stage of the classroom communication process. This facet has to ensure clear understanding of a message by learners. There are a number of factors such as language, style of presentation of the message, the meaning and importance thereof.

Hodson (1998:54) uses as an example learners who are more open to new ideas than others, whose reluctance stems from a deep-seated fear of uncertainty. This kind of learner is distrustful of new ideas unless they are presented with authority, and as a consequence, seeks certainty in knowledge and not ambiguity.

Taking language for example, learners will understand better when a message is spoken in a language they know very well, the selection and use of words is appropriate to their level and circumstances, is presented in a manner that conforms to the rules of communication in their cultures.

However, it is imperative in the OBE system that teachers and learners pay special attention to interaction and should communicate messages that promote interaction among learners of all cultures and languages.

2.3.3.5 RECEIVING THE MESSAGE (FACET 5)

Almost all the learners' senses should be well engaged when receiving the message of the teacher. A message or presentation that appeals to (if and where possible) all the senses will have a lasting effect on the learners.

From the OBE perspective, the teacher has to prepare and deliver his/her class in a way that captures all the senses of children. That is, the teacher should allow learners to touch, feel, see, hear, smell, taste (depending on what is being presented) and experience the things they are learning about. The OBE curriculum allows room for all these thereby granting children the opportunity to have first hand experiences that affect their learning for life.

2.3.3.6 DECODING THE MESSAGE (FACET 6)

Decoding entails the reworking of the message in the learner's thoughts (Vreken, 1996). Reworking of information by the learners ought to be facilitated and directed by the teacher.

The OBE framework of teaching provides that learners go through exercises that can enhance their processing of information. The teacher needs to give learners tasks, which would help them to adopt both the surface and deep approaches of information processing. This can be done within OBE by letting learners create relationships of the concepts in a specific learning area as well as among concepts in different learning areas. Learners may even be asked to draw concept maps establishing linkages of different bodies or aspects of information. This will help learners in constructing their knowledge as well as be actively involved in learning and classroom communication.

Decoding the science lessons for the learner would include a number of activities, some which are centred on communication, and others which are not. Trowbridge *et al.* (2000:175) speak in terms of 'inquiry', which is the process by which scientists pose questions about the natural world and seek answers and deeper understanding, rather than knowing by authority or other processes. In the science classroom, decoding could be achieved by learners:

- formulating questions (generating and recognising which questions are in the domain of scientific enquiry)
- planning experiments (selecting questions that can be explored through experimental procedures, designing procedures and choosing appropriate tools)
- interpreting and analysing data by using graphs, for example, drawing conclusions and suggesting further investigations (formulating new questions)
- communicate by using graphs, pictures, charts, and diagrams (Trowbridge *et al.*, 2000:175-176).

2.3.3.7 FEEDBACK (FACET 7)

According to Vreken (1996:9) feedback takes place in two ways i.e. internally and externally. Internal feedback could be what the teacher receives from listening /thinking about his message while he is communicating. External feedback is the feedback that the teacher receives from the verbal and non-verbal responses from the learners. Jagacinski (1992:315) differentiates between feedback which motivates learners to engage in learning activities to assess their improvement and mastery of the task, and feedback which helps them gauge their performance in relation to other learners' performance. The feedback which learners get from the teacher might increase their persistence in their involvement in learning activities, and it might motivate them further in their learning.

It can also be deduced from this model that there will be an interaction between the learners and the teacher, and that the learners must also be given chance of interacting amongst themselves. The feedback is required to ensure a meaningful decoding of the information and should also flow from the learners to the teacher as well as from learners to the other learners

Black and Harrison (2000:25) recommend formative assessment in the classroom which they describe as "the obvious means of providing learners with feedback to improve their performance". Assessment encompasses all the activities taken by teachers and/or by learners which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged. Learners can play an effective part in their own assessment within programmes designed to help them achieve, and sustain, an overview of their learning targets, and then apply the relevant criteria to their own progress, rather than being passive recipients in their own learning (Black and Harrison, 2000:38). Research has shown that feedback has the ability to motivate learners (cf. Butler, 1988; Butler & Neuman, 1995), thus increasing and sustaining their involvement in participative learning, and therefore in classroom communication.

As regards OBE, when the teacher interacts with learners in the class (as s/he goes around in the class directing and facilitating), will get feedback from learners' work or discussions. This can be in the form of verbal and non-verbal communication. Also, from the assignments, examination, tests, class-work etc, the teacher can get feedback that will inform him/her on the progress and achievements of learners. Black and Harrison (2000:38) advise, though, that feedback should be linked to criteria of learning not to norms or marks or grades, otherwise learners will not benefit from the feedback of their work.

2.3.4 TEACHING SKILLS CONDUCTIVE TO CLASSROOM COMMUNICATION

2.3.4.1 SKILLS RELATED TO THE ENCODING OF TEACHING-LEARNING MESSAGES (PRE-TEACHING SKILLS)

Pre-teaching skills are related to the encoding of teaching and learning messages (Vreken, 1994:10-15). Effective planning thus, becomes the key to effective communication. The teacher must do a thorough planning if he/she is to communicate well with learners. It would, however, be of great value for a teacher to consider the following skills during the pre-teaching facet:

He/She should

- decide on the learning outcomes
- select the appropriate content
- select an appropriate code for the message (written, oral)
- plan and structure an appropriate learning climate
- select an appropriate teaching-learning strategy
- plan an appropriate closure and
- plan an appropriate evaluation/assessment.

2.3.4.2 SKILLS RELATED TO CREATING A SUITABLE LEARNING ENVIRONMENT

The prevailing classroom climate determines the efficiency of teaching and learning. The classroom environment is composed of all the psychosocial relations in the classroom and also refers to the individual perception of the classroom environment, or the emotional context within which the learning takes place (Vreken 1994).

The teacher must strive to develop a climate which is good for teaching. In doing so, he/she should consider the following important aspect of an appropriate climate/environment, namely:

- participation
- affiliation
- teacher support
- task orientation
- control and order
- rule clarity.
-

The teacher should, therefore, be able to draw out less participative learners, encourage learners to have a common goals and identity, especially through group work, should play several roles other than being only a teacher, and should be able to maintain discipline in the classroom.

2.3.4.3 SKILLS AIMED AT PREPARING LEARNERS FOR THE LEARNING TASK

Vreken (2001:20-24) identified those skills that a teacher can use to prepare learners for the learning tasks or assignment as follows:

- focusing the learners' attention
- recalling the relevant prior knowledge
- starting the lesson with an interesting problem statement
- formulating outcomes
- motivating learners to take part in the lesson and to work hard to achieve the aims (outcomes).

2.3.4.4 SKILLS RELATED TO TEACHING NEW LEARNING CONTENTS

Vreken (1994:12) says that during the instruction or teaching of new learning content, the teacher uses a variety of skills to introduce, set out and explain the work to the learners. The following are the skills by which the teacher introduces, explains, structures and or demonstrates new learning contents:

- language skills
- the way the teacher speaks or communicates can greatly influence the learners' ability to maintain attention, to receive the messages and decode them.

Speaking skills are therefore determined by the following:

- speaking tempo;
- voice tone,
- voice quality
- voice volume
- feeling
- clear pronunciation.

It is important that all teachers become aware of and concerned about the use of language, which is the main medium of transportation of information (Malimabe, 1997:16).

2.3.4.5 SKILLS OF MAINTAINING ATTENTION

It is quite normal for the learner's attention to wane during teaching. It is the teachers' task is to stimulate learners' attention and interest at short intervals so that the reception and decoding of messages can take place throughout the lesson (Vreken, 1994:5-7). The following skills are of importance in this regard.

Asking open-ended questions or making statements that provoke the following response:

- amazement
- controversy
- contradiction
- curiosity
- conflict
- amusement.

Variations in stimuli can and should be used to keep the learner's attention.

Techniques that can be used include:

- focusing attention
- varying interaction styles
- the use of pauses
- shifting sensory channels
- teacher movement
- varying tempo.

Rewards and positive feedback can serve as reinforcement (Vreken, 1994:6).

These include:

- formal rewards: marks, prizes etc.
- informal rewards: oral approval, praise, expressions of gratitude, a smite of approval, etc.

A teacher can acknowledge the learners' contribution, rework it, apply it in a new situation, compare it to ideas, use it to produce a new idea or use it as summary of discussion (Malimabe, 1997:20). This will also help to keep their attention.

2.3.4.6 SKILLS TO HELP LEARNERS TO DECODE AND DEVELOP LEARNING SKILLS

Skills that the teacher can apply to ensure that effective learning (decoding and giving meaning) to take place will be discussed next.

After the learner has received the learning content/message, s/he must decode it and give meaning to it. Hearing can only be meaningful if the learner understands the message s/he received. According to Vreken (1994:6), to understand the new learning contents means to be able to do the following:

- recognising it in new situations
- applying it
- explaining related phenomena
- interpreting related information
- translating it from one form to another.

This type of learning activity requires a fair degree of intellectual processing on the part of the learner (Vreken, 1994:6). Questioning is the skill a teacher can apply to ensure effective learning (understanding).

Vreken's model (1994:7) highlights a few important questioning techniques:

- redirecting - a technique to increase the amount of learners involvement or participation.
- prompting - making use of hints and clues to aid a learner in responding successfully.
- probing - the teacher let the learners supply additional information in order to have a better and more inclusive answer.
- waiting time - by allowing more time to think the quality of the learners' answer will improve.

2.3.4.7 SKILLS TO GET FEEDBACK FROM LEARNERS

Communication is a continuous two-way process: the receiver is continuously decoding the information being sent and returning a message that is often non-verbal and verbal. The message is one of understanding or uncertain, agreement or disagreement, like or dislike, concern or lack of concern, attention or in-attention, etc. This feedback must be used by the teacher to change, adapt, and correct his message or to repeat the work.

The identification of an appropriate response for the type of nature of learners' feedback is one of the important skills that teachers must cultivate (Vreken, 1996:15). Effective teachers know that feedback is very valuable in the teaching-learning processes as well as in teacher-learner interaction in the classroom situation, as such this should not be underestimated.

2.3.5 SUMMARY OF THE COMMUNICATION SKILLS FOR OBE CLASSES

It is clear from the above discussion that the teacher has to maintain/possess proper teaching skills if successful communication is to take place in the classroom. There are numerous classroom communication skills required for effective learning in OBE. To discuss these however, one must firstly acknowledge the fact that the role of the teacher in the classroom has changed from what it used to be. For example, rather than being the sole source of information and doing the talking all the time, the teacher has to allow learners to search for information and do most of the talking/activities by themselves. This means the role of the teacher has become that of a manager, facilitator, director, and controller of learners' learning (Pretorius, 1998). The teacher needs to give guidance to and supervision of learners' learning. Consequently, the teacher requires those communication skills that enable him/her to facilitate learners' learning. Such skills would include questioning skills; listening skills (hearing, giving attention, understanding, remembering); the skills to accommodate different cultures and languages; accommodation of all groups of learners (highly and lowly motivated, highly and lowly intelligent, the fast and

slow); and the skills to deal with all gender and race differences (cf. Hodson, 1998). These skills, among others, will be very crucial in an OBE classroom environment.

In an OBE classroom environment, it is important that learners develop intercultural communication skills. For example, learners need to acquire a fair degree of or poses ability/skills to speak the languages of the different learners in the class. This will make the learners more at ease in their interaction since they will be able to understand one another. The teacher needs to create an environment that would enhance this kind of interaction. For example, by acquiring some words in every language represented in the class and use them appropriately. The teacher would persist in stimulating the learners to appreciate and use one another's language as well as to respect cultural beliefs and practices. Even when it requires criticising certain practices of other cultures, it should be done in such a manner that respects that specific culture and groups of people thereof.

This study maintains that the foregoing can promote and enhance effective learning in OBE. This is because, when people in their interaction understand and respect one another, communication is enhanced. Once communication between or among people is of a good standing, especially, in the classroom situation, it becomes a source of making learning effective. The OBE framework of teaching and learning has provision for this quality of interaction.

Again, in the OBE classroom, learners should be taught to listen to others. This means they should pay attention and hear what others are saying and try to understand as well as think about what is being said. This will make them to provide meaningful responses to discussions in the classroom.

They must also be taught how to ask questions and when to ask questions. Also, what kinds of questions they should ask. For example, they should ask thought provoking questions, or questions that will elicit finding or discovering some information (cf. Trowbridge *et al.*, 2000).

Learners must also be taught to share ideas and information with one another. This practice will promote openness which, is one of the key factors in communication, therefore also in effective learning.

After discussing the communication skills required by teachers for effective teaching, it is now important to concentrate on factors that can influence the participation of learners in the classroom communication.

2.4 FACTORS THAT INFLUENCE LEARNERS TOWARDS PARTICIPATION IN THE SCIENCE CLASSROOM

Effective classroom communication yields good learning. The survey of the literature has also indicated that communication breakdown or barriers in communication will cause low learner achievement (Malimaba, 1997:24).

Some of the factors that influence the communication process are: communication apprehension, fear to make mistake, teaching style of the teacher, poor language development, poor communication skills, culture etc. This will mostly occur among learners who are apprehensive about communication, as they tend to be affected in their learning and their performance, hence, learners who experience high communication apprehension in the classroom experience low educational achievement.

It is apparent that during the communication process some sort of anxiety or depression could be developed. This could be experienced either by the teacher, learner, or both, and will impede the processes of learning and teaching (Malimaba, 1997:27). It is therefore necessary to have a closer look at a few of the most important reasons why learners do not want to participate in classroom communication.

2.4.1 COMMUNICATION APPREHENSION (CA)

2.4.1.1 INTRODUCTION

Powers and Smythe (1980:146), and McCroskey, (1984:13) define communication apprehension (CA) as a feeling of discomfort, or fear syndrome which is experienced in relation to either real or anticipated communication with another person or persons.

Daly (1986) argues that CA has its roots in individual differences with focus on the inclination that specific individuals seek out for making communication effective or inhibiting the effectiveness of communication.

Drinkwater (1994:1-5) cites different levels of CA which can be experienced by the individual. She says that a person might have a high, medium, or low level of CA. Those experiencing high levels of CA tend to withdraw from communication.

Learners need some kind of encouragement to communicate and need to alleviate this communication apprehension. The work of an teacher will then be to focus on things that will not promote this kind of behaviour (CA), but rather lower it (Malimabe, 1997:29).

McCroskey (1984) maintains that CA and academic achievement (AA) are significantly and negatively related. This relationship (between CA and AA) can be considered to be inversely proportional in nature. This inverse relationship is based on the notion that learners who are high in CA, compared to learners low in CA, either avoid or fail to participate meaningfully in classroom communication with teachers and peers in order to avoid experiencing the anxiety they have learned to associate with communication.

Since the teaching and learning processes are carried out through communication, fear or anxiety about taking part in classroom communication (CC) results in low levels of learning. In order for effective communication to

occur in the class, learners must, however, take active participation in classroom communication as both senders and receivers of messages.

2.4.1.2 POSSIBLE CAUSES FOR THE DEVELOPMENT OF COMMUNICATION APPREHENSION

It is not an easy task to establish the real causes of CA, but some scholars such as Comadena and Prusank (1981) have established that CA develops from ones' early years.

Daly (1986:24-25) has identified four possible ways in which CA develops. They are as follows:

- genetic development
- critical role played by reinforcement
- inadequate skill development
- the absence of adequate communication models.

Each of these possible developments of CA is discussed further on.

- *Genetic development*

Buss and Plomin (1984) contend that there is good evidence to suggest that people's levels of general sociability are, to some extent, genetically based.

Vreken and Vreken (1989:4) propounds that CA is an obstacle in the development of communication skills and also calls on McCroskey to support him in this regard when he states that "social biologists" have determined that infants also differ with regard to their personalities. This difference in personalities could influence the interaction of these infants in later life with their environment and eventually lead to lower or higher levels of CA.

- *Negative reinforcement*

People experiencing high levels of CA have a history of being punished for their communication attempts while their low apprehensive counterparts have typically been rewarded (Daly, 1986:24). Therefore, high apprehension is drawn from communication situations where such individuals suffered from unfavourable reactions from the environment or those with whom they interacted.

McCroskey (1984:25) is of the opinion that if people who constitute a child's environment do not act in accordance with a consistent pattern of feedback, it might be confusing to the child. For example, if a child is sometimes rewarded and other times punished for the same communication behaviour, or if his behaviour is even sometimes ignored, the child will become confused. This confusion will however lead to a learned helplessness and negative expectations which are foundational components of CA (McCroskey, 1984).

In everyday life, learners make mistakes in language, particularly when they are speaking a second language. If grammatical mistakes are reprimanded by punishment of any form, the learner will develop an attitude of reticence. On the other hand a learner is positively reinforced by rewarding him with positive utterances such as "aha you are observant" and so on (Malimabe, 1997:33).

- *Inadequate skill development*

People with high level of CA tend to avoid communication. However, they tend to communicate less and less, with the result that they remain with inadequately developed communication skills (Malimabe 1997:33). Hence the absence of these skills increases the level of CA.

Daly (1986:25) states that children who develop communication skills later than most are at a disadvantage among their peers. Punishment from peers for having inadequate skills probably increases the apprehension of the child.

People usually observe the behaviour of others and children in particular observe the communication behaviour of people in their environment and then try to emulate it (Malimabe, 1997:34). Malimabe further says that if a child has parents and/or teachers with high levels of CA who do not communicate much, he might follow suit.

Furthermore, Malimabe (1997) contends that learners usually experience this kind of behaviour (CA), especially, when the following are considered:

- shyness can also be regarded by some teachers as the unbecoming behaviour of some learners.
- the learners' voice could be too inaudible when communicating in the class.
- a learner might be afraid of the teacher by perceiving him/her as been too harsh.
- some learners develop anxiety fright by just fearing to respond to a question or asking a question.
- prominent figure in class when answering a question, a learner becomes a prominent figure in the class, and all eyes in the class are on him/her. He or she becomes uncertain about him/herself.
- reticence - a learner might develop a withdrawn attitude as he might appear stupid if he get something wrong.
- fright of learners to be in the company of other led them to this behaviour. A learner becomes frightened to speak out in the classroom.

Comadena and Prusank (1988) suggest that high levels of CA may establish early in life. Thus, if active involvement in classroom communication is necessary for learning at the elementary and middle schools, and if CA causes elementary and middle school learners to avoid meaningful classroom communication with teachers and class mates, then one would expect a negative relationship between CA and AA in these learners. Therefore, the teacher's expectations may also have a profound effect on learners' learning;

low achievement expectations on the teachers' part may cause low achievement on the learners' part.

2.4.1.3 HOW TO REDUCE CA IN THE TEACHING-LEARNING SITUATION

In reducing or dealing with CA in the class, a teacher has to identify the levels of CA which, his/her learners have. This knowledge is very crucial in helping the teacher select and apply appropriate methods or measures that will assist in the reduction of CA among its sufferers in the class.

As a general technique, the teacher must encourage and motivate such learners to engage in communication in the classroom. For example, they should be asked questions that will compel them to speak out in the class in a language that such learners are more comfortable with. Expressing themselves in this manner will boost their morale and sustain their interest in communicating with other people (McCroskey, 1984). The teacher therefore needs to create an environment that is conducive for CA reduction.

2.4.2 SHYNESS

2.4.2.1 INTRODUCTION

The reason for the intensive focus on shyness is that it permeates every facet of an individual's school life. McCroskey, Richmond and Stewart (1986) suggest that shy people are characterised by avoidance of social interaction and when this is impossible by inhibition and an inability to respond in an engaging way. i.e. they are reluctant to talk, to make eye contact, to gesture and to smile.

McCroskey *et al.*(1986) tends to think of shyness as simply a discomfort associated with many different communication situations. He further explains that a shy person is one who is likely to feel uncomfortable when communicating

to another person, when interacting within a group of people, when called upon in class and when being introduced to a new acquaintance by a friend.

Daly and McCroskey (1984:39) have identified three major components of shyness. These three are as follows:

- instrumental (inhibition)
- emotional (discomfort or arousal)
- cognitive (worry or acute self-awareness)

These three components will now be considered by discussing each in detail in the following section.

- *Instrumental or action as an observable component*

According to Daly and McCroskey (1984), the instrumental part of an action component is the relative absence of instrumental activity that identifies shyness: withdrawals, reticence and inhibition. The two researchers ascertain that when we are shy, we tend to remain on the fringe of a conversational group, do not speak-up, mumble minimal replies if addressed, and in general fail to hold up our end of the social interaction.

McCroskey (1984) tends to highlight an integral point by saying that when this reaction is acute, social behaviour can become so disorganised as to produce shaking of limbs, clumsy gestures, and stuttering.

- *Emotional as less observable component*

The emotional component consists of fear, self-consciousness, or both (McCroskey, 1984). He propounds that if fear predominates, there are likely to be various semantic reactions that characterise reactivity of the sympathetic

division of the automatic nervous system, that is rapid breathing, quickened heart rate, elevated blood pressure, and sweating.

If awareness of the self predominates in this instance, i.e. awareness of oneself as a social object, the reaction is more likely to be blushing. Awareness represents parasympathetic reactivity, whereas the blushing reaction would seem to connote a milder form of shyness, hence fear reaction is more intense (Daly & McCroskey, 1984).

- *Cognitive component*

Daly and McCroskey (1984) have described the cognitive component as that which is experienced which may be fear or self-awareness. Daly and McCroskey (1984) furthermore say that if fear predominates, one experiences panic in the immediate situations and worry about future encounters, and also if excessive self-consciousness predominates, one suffers the intense discomfort of feeling vulnerable and inept.

2.4.2.2 CAUSES OF SHYNESS

McCroskey, *et al.* (1986:42-48) mention seven possible causes of shyness. Each of these causes will be discussed in turn:

- hereditary factors
- childhood reinforcement
- absence of role models
- skill deficiencies
- social introversion
- cultural divergence
- communication apprehension (CA).

2.4.2.2.1 HEREDITARY FACTORS

Daly and McCroskey (1984:45) postulate that the term "inherited component" means that there is a built in tendency to act in a way that is likely to lead to shyness but always in the context of a particular environment.

The two researchers add the following by saying that shyness as a social anxiety is part of the much larger category of fearfulness. Hence fear in general involves both social and unsociable contexts. It more likely that children who are generally fearful tend to be afraid not only in non-social situations but also in the social situations.

Fearfulness as part of the temperament of emotionality, has been found to have a strong inherited component (Daly & McCroskey, 1984).

The three inherited tendencies, which are identified by Daly and McCroskey (1984), that may predispose children to become shy are the following:

- fearfulness
- unsociability
- unattractiveness.

Meaning that a child who is predisposed by the inheritance to be fearful, unsociable, and unattractive is well on his way to being shy.

2.4.2.2.2 CHILDHOOD REINFORCEMENT

Reinforcement can be understood in the strict behaviouristic sense of the word, or in other words, children who were/are rewarded for communicating communicate all the more, while children who were/are punished for communicating will eventually develop withdrawal from communication (Malimabe, 1997:33).

McCroskey (1984:25) adds another dimension by stating that people in a child's environment don't act according to a consistent pattern of feedback that is, if for example, a child is sometimes rewarded and other times punished for the same communication behaviour, or if his behaviour is even sometimes ignored, the child will become confused. Therefore such confusion will in turn, lead to a learned helplessness and negative expectations. These are, according to McCroskey (1984:29), the foundational components of communication apprehension (CA), hence CA and fearfulness are considered as negative factors in the process of communication.

Daly and McCroskey (1984:29) give another example of child who may be rewarded for giving an answer in school, but punished for talking to another child in the classroom, i.e., if this child is unable to see the differences in these situations, the child may learn to be helplessness. Therefore, whenever helplessness is learned it is accompanied by strong anxiety feelings.

2.4.2.2.3 THE ABSENCE OF ROLE MODELS

The theory of modelling suggests that people observe the behaviour of other people and then try to engage in the same behaviour (McCroskey *et al.*, 1986:44).

Malimabe (1997:34) postulates that the absence of role models in classroom communication can also have a serious effect on communication. MacDonald and Burroughs (1991) contend that teachers are the authority and that they direct the flow of learners' activities. Hence learners look to the teachers for direction and will willingly carry out the instructions, (Malimabe, 1997).

2.4.2.2.4 SKILLS DEFICIENCIES AS A POSSIBLE CAUSE OF SHYNESS

People with high level of shyness tend to withdraw from communication. Whenever people lack sufficient skills for performing a particular activity, they usually avoid situations that will require them to make use of those skills

(Malimabe 1997). Hence McCroskey *et al.* (1986) assert that communicating is not different from a learned process, and a skill that is acquired through much practice and experience. They furthermore, say that people who are shy would, therefore choose occupations where communication does not play an important role or prefer a seat in the classroom or meeting where they would not be very conspicuous. They will try to avoid small group interactions wherever possible.

However, a teacher needs to identify learners in the class who exhibit traits of deficiencies in communication skills. S/he should therefore try to help them overcome this problem, for example, by encouraging them to speak out in the class, interact in small groups and other group activities. The teacher may do well by appointing such learners to lead group discussions until such a time that they improve on their situations.

2.4.2.2.5 SOCIAL INTROVERSION, ALIENATION, AND CULTURAL DIVERGENCE

These three concepts have at least one or more aspects in common. For example, social interaction revolves around and is influenced by cultural affiliation. Also, if one is alienated it will hamper one's socialisation within and among cultures. In view of this, it is worth while to discuss these concepts under one heading – outlining how they can be handled within *OBE* classes.

McCroskey *et al.* (1986:47) highlight that communication norms in various groups are not all alike i.e. dialects are different, conversational rules are also different and some tend to value silence more than talking. With respect to *OBE*, it is vital that these facts be assimilated by the teacher and be (as a matter of necessity) inculcated, practised, and respected by the teacher and all members of the class. This can promote interaction within the *OBE* class between the teacher and learners as well as among learners themselves. Once interaction is enhanced by recognising, respecting and including the various degrees of diversity (of introverts and extroverts, different cultures, religious inclination etc) in the *OBE* class proceedings, the communication barriers

inherent in social introversion, alienation and cultural divergence would be overcome.

Social introversion concerns the degree to which people desire to interact with others. McCroskey *et al.* (1986) discuss social introversion and extroversion. *Introversion* on the one hand refers to a person with an introverted personality who tends to be shy and withdrawn and also prefer to be alone most of the time. *Extroversion* on the other hand implies persons who are (being described as) talkative and are much happier when they are with other people. They are also apprehensive about communicating but they are so people-oriented that they force themselves to communicate despite their fears.

According to Basset and Smythe (1979:235) alienation may be thought of in one sense as the logical outcome of powerlessness characterising the learner role. Basset and Smythe (1979:235) have also proved in their research that alienation among learners is sometimes a cause and effect of a poor social environment for learning. The teacher needs to know this and commit to improving the condition in the *OBE* class towards promoting classroom communication. The *OBE* system of education is to empower/capacitate learners towards fulfilling their roles and engaging in among others meaningful life and life-long learning.

McCroskey *et al.* (1986:46) hold that socially alienated individuals may reject the value of communication and become low-talkers. As such, Malimabe (1997:43) suggests that schools should, however, foster respect for cultural differences by making teachers aware of how their own verbal and non-verbal patterns may differ from those of their culturally-diverse, learners, and so to prevent them from creating a low morale at the school. This viewpoint is one of the key foci of the *OBE* system of education, which is currently being advocated in South Africa. It is believed that through *OBE* most of these issues (social alienation, cultural divergence, social introversion and the likes) shall be better understood and managed in order to promoted oneness and adequate respect for one another. It is therefore significant for teachers to integrate these in the *OBE* classes as much and vigorous as possible.

2.4.3 POOR LANGUAGE DEVELOPMENT

Previously, in South Africa the approach to language development was genuinely poor due to the fact that the privileged groups constantly imposed their language on other groups (even in school situation). However, with the advent of *Curriculum 2005*, which stresses the equality and significance of different languages, one hopes that the development of languages in South Africa shall be improved. This will positively influence the language situation in schools and classrooms as well as better learning and communication in the classrooms.

Language of instruction refers to the language, which is used by the teacher in class to instruct learners (Wang & Lindval, 1984:161; as quoted by Mathebula, 1995). Banie and Mwarwenda (1994:128; as quoted by Mathebula, 1995) assert that in the multi-lingual African countries choosing one language over another, though, may be restricted by various linguistic groups is vital. Hence, Mathebula (1995:92) cites an example that in the South African black schools, the learners' mother tongue is used as the medium of instruction during the first two or four years of education, then English becomes the medium of instruction while the mother tongue is unacceptable as a school subject. This hampers learners learning due to the lag between the children's competency and the degree of demand for (competency in) English language, which is necessary for active and meaningful learning. *Curriculum 2005* places emphasis on the development and use of mother tongues for fundamental school learning. And that the introduction of foreign languages be gradual and not imposed on learners (especially in a manner that retards their intellectual and social growth).

MacIntyre and Gardner (1991:103) indicate that learners' anxiety would be high when taught in a foreign language (which is not mastered by them), and that their learning performance will be affected. Hence, a negative achievement and poor classroom participation and or communication will be experienced. This kind of behaviour will be portrayed in the results during and after the lesson period. However, the good news is the fact that *Curriculum 2005* seeks to

reverse this situation by encouraging the development of languages in a manner that promotes cultural understanding, tolerance, and integration (among other benefits). If this is well received by communities, teachers, cultures, and learners, it has a potential of yielding good tidings for our nation. It is therefore important that provision be made for these changes within the *OBE* classrooms.

2.4.4 CLASSROOM CLIMATE

According to Jacobs and Gawe (1996:2) the success of the teaching-learning activity stands or fails by the teacher's ingenuity (or lack of it) in creating a classroom climate that is conducive to active participative learning by the learner. Classroom climate and the classroom environment are looked at in two ways, namely, the social environment and the physical environment.

2.4.4.1 THE SOCIAL ENVIRONMENT

Basset and Smythe (1979) assert that the social environment may be defined as the level and quality of emotional involvement experienced by the classroom group. It also evolves through the dynamic process of classroom interactions involving personal relationships at several levels i.e. teacher-class, teacher-learner, and learner-learner.

Vreken (1996) holds that the description of the creation of a suitable environment, when he argues that for the sake of order and control a climate is created where learners will be orderly, quiet and polite and where classroom activities are well organised.

According to Malimabe (1997:22), the important task of the teacher is therefore to maintain a classroom status quo, which is as educative, as possible and conducive to participation in learning activities. He further says that quietness might not be necessary as the concern is with communication activities.

2.4.4.2 THE PHYSICAL ENVIRONMENT

Basset and Smythe (1979) mention some of the aspects of physical environment that can affect people and their communication i.e. the classroom setting, colour, and overcrowding.

Classroom setting is an aspect of physical environment that can influence instruction and communication in the classroom (Basset & Smythe 1979). They also propose that most teachers however, arrange learners in rows and columns facing the front since the use of this seating arrangement has important consequences for communication.

The most important is that learners in the front centre section interact with the teacher most, hence learners seating outside the front-centre have little interaction with their teacher (Basset & Smythe, 1979).

Research indicates that colour can influence productivity achievement and moods (Basset & Smythe, 1979). It is also stated that temperature can be a negative source that influence learners' learning and their interaction in the classroom, that is, if the temperature is high or too low. Little is known about the effects of cold, but when it is too hot learners become irritable (Basset & Smythe, 1979). They perceive the entire environment as being unpleasant and thus their reason for being there in a negative light.

Basset and Smythe (1979) state that people usually report negative feelings after spending time in unattractive places, therefore, most learners are likely to feel better and learn more in attractive surroundings.

2.4.5 CULTURE

Culture refers to as a system of shared symbols, beliefs, and practices created by a group of people as an adaptive mechanism for their survival and development and transmitted to succeeding generations as part of their

communicable (Hofstede, 1980; as quoted by Crushner & Trifonovitch, 1989). He also describes culture as "mass programming of the mind".

Triandis (1971) identifies another characteristic of culture that is essential for thinking about interaction and adjustment while working with diversity. He states it as the distinction between objective and subjective components of culture:

- objective components refer to the visible, tangible aspects of a particular group of people.
- subjective components of culture refers to the level of people's subjective that most intercultural misunderstandings and communication problems apparently exist.

Crushner and Trifonovitch (1989:318) have also identified some barriers when dealing with diversity. They describe these as obstacles that inhibit effective interaction with those different from us. These obstacles are:

- sociological obstacles
- historical obstacles
- psychological obstacles.

- *Sociological obstacles*

Socialisation is the process by which individuals learn what is required to be successful members of a given group (Crushner & Trifonovitch, 1989:319). They also hold that socialisation is a potent and powerful process that people are hardly aware that other realities could exist.

They further say that although a degree of ethnocentrism is necessary for binding a group of people together, it may become an obstacle when it becomes necessary to interact and work with others.

- *Historical obstacles*

Another problem in learning about culture and the difficulties encountered in cross-cultural interaction is that people have little knowledge about themselves (Crushner & Trifonovitch, 1989:319). They contend that one way of looking at culture is to consider it as a set of hidden, recurring patterns of behaviour and thought, hidden because each person learns to behave appropriately in a given culture.

There is no doubt about the impact that history of the different cultures has on teaching and learning in the school or classroom. In *South Africa* for example, it is very evident what impact our past bears on our present (pain, hatred, exclusion, and rejection to mention only a few). These things unfortunately, do surface and influence to a great extent what happens in the classroom. However, it is important that we manage the present in a way that creates a better future for all of us. The *OBE* system of education seems to be a step in the right direction to correct the imbalances of the past for a better future. What happens or continue to happen in the *OBE* classes shall partially determine the nature of our future.

- *Psychological obstacles:*

- With the attribution process people make judgements about others based on behaviour they observe (Crushner & Trifonovitch, 1989:20). When people fail at a given task, they are likely to look for blame in the situation, not in themselves.

Crushner and Trifonovitch (1989) say however, that when one observes another's failure, the tendency is to place a trait label on that person as uneducated etc. These trait labels often become negative stereotypes of the group (Crushner & Trifonovitch, 1989).

2.4.6 TEACHING STYLES

Tuckman (1995) states that teaching styles affects learner's learning. The teaching style of a teacher could also have an effect on the communication process in the classroom. However, if the teacher is not well organised and prepared for his/her teaching, then the learners also will be unable to comprehend what he/she is trying to inform them about. Therefore, this is a crucial component of communication that can seriously be dealt with by teachers.

If in their harshness and severity the teachers sometimes strike the learners, for example, they will automatically display frustration.

According to the educational history of SA black schools, the type of teaching styles which were used are largely authoritarian. Teachers were applying punishment in order to encourage learners' participation in the classroom, since authoritarianism was part of our cultural and educational tradition to encourage good performance and achievement from learning. This type of teaching styles used to be applied with the aim that learners should learn.

Therefore, learners taught by the teachers who were perceived as stricter, more leader-like and less uncertain tended to earn higher grades on subject achievement tests, where those taught by teachers who were perceived as dissatisfied or uncooperative tended themselves to be less satisfied with the experience.

The only ways in which the teacher can achieve these qualities, is through active attending and having good listening skills.

2.5 DIDACTICAL GUIDELINES TO INFLUENCE LEARNERS' PARTICIPATION IN CLASSROOM COMMUNICATION

From the discussions in the previous paragraphs it is clear there are a number of strategies or guidelines that if used will positively influence learners' participation in classroom communication. Some of these are as follow:

- Teaching methods, which allow active learner participation, are more likely to reach further than merely increasing knowledge, changing attitudes and behaviour.
- Through group work, projects, class discussions, and self-learning activities the learners can be actively involved in classroom communication.
- Interactive activities promote lateral thinking skills, decision-makings skills, problem solving skills, communication skills and self-confidence.
- Interactive activities make the learners able to experiment and act out new behaviours.
- Communication skills need to be developed between different groups, for example, gender, population groups and age groups.
- Apart from formal lectures, ask thought-provoking questions in order to stimulate thinking skills and elicit answers.
- Acknowledge the input made by each learner, whatever the contribution.
- Encourage learners to value their ideas and to recognise their own worth.
- Let them know that making mistakes is a valuable part of learning and they can learn from mistakes.
- Communicate positive messages rather than negative ones
- Make them know that by working in groups communication skills are developed and understanding is promoted between group members.
- Co-operation is enhanced and leadership traits elicited in-group work.

If a teacher utilises the above guidelines in an OBE class, communication will improve and more effective learning will take place.

2.6 SUMMARY

The purpose of this chapter was to investigate classroom communication and to ascertain its role and effectiveness in the teaching and learning environment.

The classroom communication model discussed shows the way in which classroom communication could be effective.

Factors that influence classroom communication were also discussed. These factors seem to be the major factors that impede participation of learners in the classroom communication.

Chapter three will therefore focus on ways in which teachers can positively influence learners' participation in classroom communication and develop their communication skills.

CHAPTER THREE

WAYS TO IMPROVE THE COMMUNICATION OF LEARNERS DURING THE TEACHING LEARNING SITUATION

3.1 INTRODUCTION

This chapter deals with the question of how learners can get involved in every classroom communication facet in order to improve their classroom communication skills. To do this, every facet of the classroom communication model (Vreken, 1994:7-9) is discussed with examples on how learners' classroom communication skills can be improved.

3.2 CLASSROOM COMMUNICATION FACETS AND LEARNERS' INVOLVEMENT

Learners need to be involved in classroom communication in such a manner that in every facet their communication skills are improved. This however, cannot be reached automatically by the teacher and/or learners. It has to be a consciously planned activity and hard work on the side of both parties (teachers and learners) (Sotto, 1994:149). The ways highlighted in this study are but only a few of the many ways. It is therefore imperative that the teacher remains innovative in finding ways that apply better for his/her classroom communication situation.

The classroom communication model considered and used as a basis for this discussion was suggested by Vreken (1994:8-9). The classroom communication model consists of seven facets namely coding the message, creating a positive learning climate, preparing the learner, transmitting the

message (teaching), receipt of the message, decoding/giving meaning, and feedback. In the following sub-headings (3.3 -3.9), attempts are made to address the question of how learners' classroom communication skills can be improved.

3.3 CODING THE MESSAGE

According to Vreken (1994:8), in this facet, the information, ideas, and or feelings that are selected and intended to be passed to learners must be phrased in a message form in such a way that is clear, and to the level of learners' ability among other factors. The message must be in a form that it will stimulate attention, interest, and give sufficient directions in a manner that will cause learners to participate actively and thereby improve on their communication skills such as listening, interpreting, and decoding only to mention a few.

The selection of language, for example, should be done with good knowledge and sensitivity to the diversity (of cultural and religious inclination) in the classroom under consideration (Zabel & Zabel, 1996:72). The technologies to be used as the media for transmitting the message in its various forms, for example, speech, written form, or in video form should all be selected in accordance with the criteria for media selection. The non-verbal communication techniques which could assist in the transmitting and decoding of the message should be carefully considered in order to minimise confusion and to ensure clarity and involvement of learners (Zabel & Zabel, 1996:37). The more carefully these are dealt with the better the learners are likely to participate more actively as well as improve their classroom communication skills.

Another key factor which must be considered in this facet, is the *relevancy* of the idea or information (Jacobs & Gawe, 1996:14; Sotto, 1994:26). This is because, human beings are inclined to grasp more readily facts that they find relevant to their experiences. Also, the more relevant information is to one's

situation, the better one is likely to apply it to one's real life situation. The teacher needs to ensure that the intended information is relevant to learners' situation. For example, it should be relevant to their society or country, should fit with current issues that confront learners, and it should correlate with their pre-knowledge. Ideas or information that do not apply to the learners' situation should not be selected for them at all. Things that may offend or discourage or even abuse learners must be eliminated at this stage of planning. If the aspect of relevancy is applied in this facet, such information will stimulate learners' interest and consequently their active involvement in classroom communication will be greatly increased.

The teacher must keep in mind that the effectiveness of his/her teaching depends to a large extent on thorough and insightful preparation or planning that s/he does during this facet (Sotto, 1994:136, 143-46). Planning is the basis for all the teaching and learning that will be taking place in the classroom. It is therefore important that enough attention is given to this facet. Effective planning would set a stage for effective teaching, effective learning, and effective communication in the classroom (Sotto, 1994:142-46).

3.4 CREATING A POSITIVE LEARNING CLIMATE

According to Jacobs and Gawe (1996:2) creating a good climate in the classroom for teaching, learning and communicating is an art on the side of the teacher. It is something that is learned, but it is also something that is planned. It has basically two aspects to it: the physical factors and the psychosocial factors. Both aspects of the classroom climate must be well integrated in any given lesson in order to enhance involvement and active participation (e.g. asking and answering questions) for both learners and teachers. In many cases, in the creating of a positive classroom climate focus is largely given to the teaching process (usually done by the teacher) more than it is to the learning and interpersonal communication between and among learners. To create a positive climate for teaching, learning and communicating, the teacher needs to think and decide beforehand what s/he

can do in the class (e.g. ways to encourage self-expression by learners, select various resources and sources for learners to contact) that would create the climate required for that specific learning activity or lesson (Jacobs & Gawe, 1996:15). It should be noted that every topic or aspect thereof may require a careful combination of the different factors that bring about good classroom climate for teaching, learning and communication.

As far as the physical factors are concerned, the teacher need to ensure that the classroom is well ventilated, lighted and the arrangement of seats is in a good order (Lindeque, 1996:168; Vreken, 1994:8). Also, where temperature adjustments permit, the teacher should ensure that a suitable temperature is selected. The teacher must educate his/her learners regarding ventilating, lighting, adjusting temperature level and the likes, so that learners can help in checking and ensuring that these are in order even if the teacher is not physically present. Learners must know the importance and implications of these physical factors for their active learning and interaction among themselves and with the teacher, or the material under study.

Notwithstanding, Vreken (1994:8) maintains that the teacher needs to ensure that the psychosocial factors which are needed in the creation of a conducive climate for teaching, learning and communicating are put in place as well as properly handled. For example, bringing about conditions which instil mutual acceptance and trust between him/her and the learners. This may be attained by the way the teacher presents his/herself to the learners, the manner in which s/he handles or controls the class, the kinds of rules s/he deploys to control and discipline the class. The teacher needs to exercise a good degree of class control. S/he must avoid abusing the learners but should rather respect and discipline them in a manner that does not distort his/her good relationship with the learners. Good instruction and good classroom management overlap and teachers' actions speak louder than their words (Zabel & Zabel, 1996:135).

Vreken (1994:8) indicates that assignment of tasks to learners is one of the ways to create a positive climate for teaching and learning. The teachers

should assign tasks to learners accordingly and see to it that they complete their tasks as expected of them and on time. For example, the teacher should give learners reading to do prior to a lesson in which that specific work is treated. The teacher should avoid a situation whereby s/he gives assignments or homework and never goes back to check whether or not the learners have done it. Also, to be avoided is a case where learners are given reading or work to prepare for the next class and the teachers leave those aspects and continue with something totally different from what s/he promised learners. These kinds of behaviours will confuse and discourage the learners as well as distort their mutual acceptance and trust for the teacher. This kind of a negative relationship will affect interaction, especially communication in the classroom. It therefore has to be avoided.

Furthermore, in this facet the teacher needs to prepare well beforehand regarding how s/he will together with learners interact in enforcing or putting in place both the physical and psycho-social factors necessary for creating a conducive climate for positive communication in the classroom (Bentley & Watts, 1992:30). The teacher, knowing the dynamics of his/her class, should select rules and decide on appropriate disciplinary measures that suit the class. S/he needs to make learners aware of the consequences or penalties that one would get on misbehaving or doing something contrary to the set standards for conduct in the class and handling of assignments. The teacher must therefore make it a point that s/he abides to what s/he has told the learners.

3.5 PREPARING THE LEARNER

Regarding the stage or facet of preparing the learners for their learning tasks as well as improved communication in the class, the onus lies partly with the teacher. According to Vreken (1994:8), teaching cannot take place efficiently if the learner does not pay attention and is not prepared to participate in the teaching communication. For this to happen, the teacher needs to prepare or help learners prepare for their classes beforehand. To exemplify, the

statement of Vreken, the teacher needs to -in the information sessions of the different subjects and/or modules - give learners adequate directions or information regarding what is expected of them in their learning. Also, the teacher needs to give learners works to read or prepare for the class lessons that are forthcoming. S/he must emphasise the importance of reading or doing the work before coming to the class. As learners do the assignments or read/prepare what was assigned to them, it is likely that they may have something to say in the class discussions either in the form of questions or providing answers to other questions raised (Zabel & Zabel, 1996:133).

Due to the fact that the learners have prepared beforehand, it will motivate and place them in a position to contribute something meaningful to the class discussions. This will boost their communication in the classroom. However, the teacher needs to facilitate the discussions, for example, by asking them questions, encouraging them to make comments on what they read or prepared, and brainstorming on certain aspects (Mahaye, 1996:218). The teacher may even ask them to form groups and discuss or take stock of the important facts and ideas that learners have encountered as they worked through their work (Bentley & Watts, 1992:56-63). After that the group shall have to report officially to the teacher and entire class their findings or ideas or resolutions. This method or strategy shall work well, especially in the *OBE* framework of teaching. Applying this method in the *OBE* classroom environment would go to a point where the teacher aids learners to link the information to other bodies of knowledge they have already learnt in other subjects or learning areas.

In view of the foregoing, it could be said that the extent to which learners learn effectively, communicate efficiently and interact one with another as well as with the teacher in the class depends to a great extent on how well the teacher prepares or makes learners to prepare before attending their classes (Vakalisa, 1996:11). Also, it depends on how well or efficiently the teacher facilitates learners' interaction and communication in the class based on their prior preparation.

This facet of communication, according to this study, is the one crucial stage during which learners' communication in the class shall be better enhanced. This is because, even those learners who suffer from communication apprehension (CA), if they do prepare their work before coming to the class, they are likely to have something to say or contribute to the class proceeding. Knowing their work and the teacher aiding them to participate actively in class activities shall boost their confidence and desire to participate in class discussions (Vakalisa, 1996:17). As this practice (of preparing beforehand and being encouraged by the teacher to say something) persists, such learners (with CA) shall overcome their fears and begin to communicate effectively and freely in the classroom proceedings. The teachers as well as the learners have their duties to perform in improving classroom communication of learners. Each party therefore needs to know its part and play it well, so that learners -irrespective of their situations and inhibitions - will eventually become better communicators in the classroom situation and in the world at large.

In light of the above, Vreken's statements (1994:8) "The learner must thus be prepared to participate in a positive manner in the teaching. The teacher has an important role to play here and must also possess the necessary teaching skills to accomplish this" become paramount.

3.6 TRANSMITTING THE MESSAGE

This facet of classroom communication lies solely with the teacher. This is because s/he has a message that s/he wants to deliver to the learners, for example, s/he wants to present new information, explain it, structure it as well as demonstrate it. S/he therefore needs to present the message in a way that will attract attention, listening, interest, and reaction from the learners. It therefore goes without saying that the teacher should select the best and most applicable methods for transmitting the message. The degree of clarity and simplicity of the message geared towards understanding by the learners should be considered in this facet. A message that is unclear and ambiguous

deters the attention and interest of listeners. According to Zabel and Zabel (1996:133), clarity is related to quality of instruction. Teachers who use analogies and examples more adequately clarify the information or skills they are teaching more than teachers who do not. For example, a teacher who is presenting the concept of trees and fruits may refer to specific recognisable examples which the learners know and then have the learners identify other examples. The teacher should take note of the aspects of the message which require being written and those that s/he plans to deliver verbally. Usually, messages in written form engage receivers more than some verbal message where pronunciation and grammatical aspects are strong factors in affecting quality of the understanding thereof. It is therefore important that the teacher decides beforehand (depending on the dynamics of his/her class) how best s/he will transmit the information to the learners.

According to Lindeque (1996:159), efforts should be made by the teacher to deliver the message in the language that learners would understand (him/her) better. This is particularly difficult in multi-cultural or multi-lingual classrooms where the teacher may not have a good command of all the languages that are represented. The teacher then has to use the language(s) that might be common or better understandable to all learners. This is a difficult task; however, the OBE curriculum encourages the use of code switching in the classroom discussions. Learners need to be made aware of this as well as accept it, that the teacher may use different languages in the class where necessary to pass messages across to relevant learners.

3.7 RECEIPT OF THE MESSAGE

Just like the transmission of a message facet basically concerns the teacher, so does this facet (receipt of the message) concern solely the learners or learners. As the teacher delivers his/her message, it is then the duty of the learners to receive the message accordingly. This means that the learners have to acquire the skills that are necessary for the reception of messages, for example, paying attention, being intrinsically motivated, and developing

interest in the message that is being delivered. The learners also have the responsibility to ask (the teacher) questions where and when the message delivered or being delivered is not clear or understood (Jacobs & Gawe, 1996:4).

In order to receive the message very well, learners have to commit all their senses necessary for receiving messages. For example, if the message is audible, the learner has to hear it, if the message is visual, the learner has to see it, if the message involves odour, the learner has to smell or inhale it. This is because the senses are the channel through which messages reach the human mind (Van Rooyen & Van der Merwe, 1996:241).

Vreken (1994:9) asserts that the task that the teacher has in this regard is to ensure that learners pay attention continuously as well as to motivate them (extrinsically) to be interested and understand the message as well as ask questions. In doing this, the teacher has to use the different skills that s/he has acquired for helping learners in this regard. For example, s/he has to give learners some short breaks and make some jokes just to refresh the learners' minds and get them focused on the task again. Learners on their side too need to ensure that they receive the right message as applicable to the senses (Van Rooyen & Van der Merwe, 1996:238). They should consider it a good opportunity to have been receiving instructions from the teacher with regards to their work, which is aimed at preparing them for the world they are facing and shall face later in life. With this in mind, learners ought to pay adequate attention in receiving the message that is being delivered.

3.8 DECODING/GIVING MEANING

It is important to keep in mind that the facets discussed above are foundational to the facet of decoding or giving meaning to the message or the material that is being learnt. This facet seems to be the most important stage of communication, especially if the learners are able to give correct or acceptable meanings to what is taught to them (Vreken, 1994:9). This stage

is the measure of how well the teacher has done his/her job as well as how well the learners have done their job regarding their learning. It is therefore important that everything that is necessary should be done in order to attain the best results from this facet. It is only when learners give the correct meanings to what is taught to them that they can make use of such knowledge in life as well as discuss it meaningfully (Sotto, 1994:26).

According to Vreken (1994:9), decoding includes the consideration and processing of the message in the learners' mind. To be candid, there are different ways in which learners process information that they interact with. The one way is by making links with the existing knowledge in the mind. In this process, the learner has to give meaning to what s/he is learning and link that to what s/he has learnt before, since this helps the storage and retrieval of information. The use of mind maps or concept maps enhances the procession and storage of information. Learners are encouraged to make use of mind or concept maps to better their understanding of the relationship among the bodies of knowledge that they are dealing with. The teacher can give good assistance in this regard. The teacher has a task of guiding the learners in the process of processing and storing information in a more meaningful way.

3.9 FEEDBACK

This is the last facet of Vreken's (1994:7) model of classroom communication. This facet concerns the responses that the teacher receives from learners as s/he presents the class or transmits messages to the learners. Vreken (1994:9) states that there are two ways in which the teacher obtains feedback about his/her transmission of messages to learners. The feedback takes place both internally and externally. Internal feedback is the feedback the teacher receives by listening/thinking about the message while s/he is busy with the process of transmitting. External feedback is the one that the teacher receives through the verbal and/or non-verbal responses of the learners. According to Zabel and Zabel (1996:133), learners' responses to questions

also inform the teacher about his/her instructional effectiveness. These make the teacher to deduce whether or not the learners clearly receive the message and give the right meaning to it. With this the teacher can make informed decisions regarding further actions that s/he would take with the learners.

Feedback is very important in classroom communication in the sense that it can be used by the teacher to initiate discussions and or present the lesson again. It is also vital in giving directions as to which aspects of the learning activities or materials should be revisited or repeated. It also helps in providing information concerning which learner has got the teacher's message correctly and has given the correct meaning thereof. Knowing the position of the learners with regard to their learning progress, the teacher may make them to speak out what problems they encountered or things they do not understand. As the learners explain or open up, the teacher gets information which helps him/her in getting such learners on the right track. In doing so, the learners have moved one step ahead in improving on their communication skills. That is, they have learnt the principle of looking for help when they cannot do things on their own or do things correctly. They might also learn that it is important to ask other people when you do not know something. This might also lead them to finding help from their counterparts (Bentley & Watts, 1992:72-74; Sotto, 1994:198-99). In this manner, learners' communication is improved.

In view of the above, feedback is very crucial in assisting learners to improve on their communication skills in the classroom. It is also helpful in improving interaction between the teacher and learners.

3.10 CONCLUSION

In this chapter efforts were made to answer the question of what can be done in order to improve learners' classroom communication skills. The seven facets of Vreken's (1994) classroom communication model were discussed with examples of what the teacher as well as learners can do in order to

improve interaction in the class and consequently better their communication skills.

It has been evident in the discussions in this chapter that both the teacher and the learners have a responsibility for the betterment of learners' classroom communication skills. Efforts were made to indicate how this might work in an OBE classroom situation. It is agreeable that in the OBE classroom situation, facilitating learners from different cultural, religious, lingual inclinations in a manner that makes them to acquire positive interaction and communication is not an easy task. The teacher has a great deal of effort to put in, in order to make it work effectively. This does not, however, imply that teachers should be scared of their duty but it rather calls for preparedness to face the challenges that await teachers on this long journey. If teachers join hands and are truly committed, they shall succeed in transforming traditional classrooms to interactive/participative classrooms in South Africa.

CHAPTER 4

EMPIRICAL STUDY

4.1 INTRODUCTION

This chapter deals with the problem questions stated in chapter one. The measuring instrument, i.e. the questionnaire will provide the data to be analysed. The responses from all the participants, and the statistical technique used in this analysis will be described, the data and statistical information will be provided in table forms.

4.2 METHOD OF RESEARCH

4.2.1 QUESTIONNAIRES FOR SCIENCE LEARNERS

A questionnaire (cf. Appendix A) was designed based on McCroskey (1984). The aim was to identify factors influencing participation in classroom communication and the manner in which which teachers can positively influence the classroom communication of science learners in secondary schools in the Potchefstroom District.

The questionnaire was divided into the following sections:

Section A: General information

Section B: General participation in class

Section C: Group discussions in class

Section D: Teacher-learner or learner-learner conversation in class

Section E: Giving a speech/presentation in class

The questions were of the following types:

- Always/Sometimes/Never

- Yes/No/Sometimes
- Agree/Disagree

An open-ended question was also included in order to give learners an opportunity to voice their opinions.

4.2.1.1 POPULATION

The target population was secondary school learners, both male and female, preferably the Grade 8 science learners of the 13 Potchefstroom secondary schools. The total population of the research includes learners from 12 secondary schools of the Potchefstroom circuit (cf. Appendix E). The schools in which the research was conducted can be categorised into two types: English medium schools, comprising Black (Tswana) schools (n=4) and multicultural schools (n=5), as well as Afrikaans medium schools (n=3) (cf. Appendix E).

A stratified sampling method was used (De Wet *et al.*, 1981:114-116). From all the Grade 8 science learners a group of 20 learners were selected at random. The technique suggested to the school principal was that from Grade 8, 20 learners were to be chosen in the following manner: a researcher would choose any learners from those numbered, and start counting learners up to 20, with the twentieth one standing aside to form the first one of the group for that grade. The procedure would then be repeated until the twenty learners were chosen for that grade. The school would therefore be represented by 20 Grade 8 science learners, irrespective of gender.

- **Anticipated responses and data received**

The statistics that follow were anticipated during the planning of the research.

- **The actual questionnaires received**
- Number of schools which responded

12

- Number of learners who participated 240
- Number of questionnaires received 240
- Number of questionnaires rejected from the statistical analysis 5

The 13 schools that were supposed to be tested could not all be reached. The questionnaires (Appendix A) were distributed to 12 secondary schools, of which all responded.

4.2.1.2 PROBLEMS ENCOUNTERED

The statistics discussed and outlined above clearly show that there were some problems in carrying out the research. The problems experienced were with schools, teachers, learners and principals.

4.2.1.2.1 SCHOOLS

The time allocated for conducting research, which was after school, was not convenient. Learners were in a hurry to go home and were not prepared to stay for the extra time required to fill in the questionnaires.

4.2.1.2.2 LEARNERS

Discipline proved to be a problem in some of the schools. The learners were disruptive and unwilling to co-operate. In some instances all the learners would want to take part in the research, thereby disrupting the chosen 20 learners.

4.2.1.2.3 PRINCIPALS

The researcher would agree with the principals on dates and times for conducting research (cf. Appendix C). However, the researcher sometimes arrived to find that the principal had changed the dates and times which were already agreed upon without giving explanations or reasons.

4.2.1.2.4 MISCELLANEOUS PROBLEMS

Conducting the research involved extensive travelling which had unforeseen financial complications. Being sent back and forth by principals meant additional time and money which was unplanned and unbudgeted for.

4.2.2 INTERVIEWS WITH TEACHERS

An interview guide for teachers was designed (cf. Appendix B) to assist the researcher in interviewing the teachers, and to guide the interviews along specific lines. The aim was to find out the types of classroom communication which teachers applied or promoted in their classrooms (cf. 1.3.3), and the frequency with which they take place. The teachers were also asked for their opinions on factors which influence classroom communication (cf. 1.3.2).

4.2.2.1 POPULATION

A total of 12 teachers from all the participating schools were interviewed. The teachers were all science teachers currently teaching secondary school learners. The total population of teachers includes teachers from the 13 secondary schools where questionnaires were administered to learners. The teachers were interviewed with the permission and the co-operation of the principals.

4.2.2.2 PROBLEMS ENCOUNTERED

Most of the teachers refused to participate in the interviews. Their reasons included being suspicious that the researcher was from the Department of Education trying to spy and search for information. In some schools, the teacher sent for the interview was not the actual teacher for the grade in which research was conducted. The teacher would be from a higher grade, for example, Grade 12. The reason could have been that the teachers who were supposed to be interviewed did not have confidence in their ability and their knowledge of their work.

4.3 RESULTS

4.3.1 RESULTS OF QUESTIONNAIRE SURVEY

In this section efforts are made to present, analyse, and discuss the data which were obtained through questionnaires (see Appendix A). The questionnaire had five sections. Section A focused on general information concerning the respondents. Section B sought information about the learners' general participation in class. Section C was concerned with the learners' involvement in group discussions in class. Section D dwelt on teacher-learner and learner-learner conversations in the classroom. Section E concentrated on finding information about the feelings and behaviour of the learners when they have to give a speech or to make presentations in the classroom.

4.3.1.1 GENERAL INFORMATION

The section on general information had three items: item 1 was on the school from which learners were completing the questionnaire. The remaining two items wanted information about the number of learners that completed the questionnaire and the gender of the respondents.

teachers can contribute by encouraging all learners to see science as relevant to their interests and experiences. Discussions and activities designed to improve gender-related sensitivities towards science can be integrated into science lessons. As an example, they use questioning styles of the teacher; asking boys more higher-order cognitive questions while asking the girls easier questions might perpetuate the notion of science as a male endeavour.

While it would have been desirable to compare the patterns of classroom communication of boys and girls, it would have been going beyond the scope of this study.

4.3.1.2 LEARNERS' RESPONSES TO THE QUESTIONNAIRE

Learners' questionnaires are analysed and discussed in this section, with the aim to answer the questions which were posed in chapter 1.

Table 4.1: Learners' appreciation of the teacher's questions

<i>Question</i>	<i>Always</i>		<i>Sometimes</i>		<i>Not at all</i>	
	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>
1. I appreciate it when the teacher asks a lot of questions.	69	29.4	153	65.1	13	5.5

The aim of this question was to determine the learners' feelings about their teacher's questioning patterns and habits. The learners' responses to this question would also provide some insight into the nature of classroom communication.

The majority of the learners (65.5%) indicated that they appreciate the teacher asking a lot of questions only sometimes, while 29.4% of the learners indicated "always". Only 5.5% of the learners indicated that they do not appreciate a lot of questions from the teacher. Teacher questions are an

integral part of the teaching process, but are more than a means of getting learners to participate in class.

According to Kyriacou (1986:23) many teacher's questions inhibit learners from feeling free to voice their ideas, because teacher's questions are seen as an attempt to assess what learners should already know. However, questioning also promotes learning through encouraging learner mental activity, for example thinking critically and analysing (Kyriacou, 1986:56). Questioning learners is one of the easier ways through which a teacher can gauge the learners' level of understanding and the learning which has taken place.

For learners, questioning takes on a different meaning. It produces anxiety for a number of reasons, including not being able to express oneself well, fear of public speaking, fear of making a fool of oneself before fellow learners, and a negative classroom climate. That the majority of learners in this study appreciate the teacher's questions only sometimes is an indication that the questioning behaviours of the teachers could be improved. In general, this could be done in a number of ways:

- by encouraging learners to speak their minds and ideas ;
- by using a wide range of questioning techniques and styles (Kyriacou, 1986:106; Mahaye, 1996:223);
- dealing appropriately with incorrect answers (Mahaye, 1996:226).

Sotto (1994:178) claims that in his research he has noticed that when he asks questions and is met with silence, he avoids picking a learner to answer, he avoids repeating the question, and avoids supplying the answer himself. By keeping silent and encouraging learner responses (e.g. through facial expressions), the following changes take place:

- the length of learners' responses increase;
- the number of spontaneous and relevant comments increase;

- the learners' confidence when responding increases;
- learners comment more frequently on each other's responses;
- the learners ask more questions.

It might also be significant that only 5.5% of the learners (cf. Table 4.1) do not appreciate the teacher asking many questions. This number is relatively small, and while it is not to be taken as insignificant, it suggests that the teachers are not totally amiss in their questioning behaviours. The responses to this question suggest that classroom communication is not as effective as it could be, but is also not failing totally although remedial steps could be beneficiary.

Table 4.2: Learners' nervousness when speaking in the classroom

Question	Always		Sometimes		Never		Didn't answer	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
2. I get nervous when I have to say something in the class.	25	10.6	141	60.0	63	26.8	6	2.6

A relatively small percentage of the learners claimed to always feel nervous when they have to speak (10.6%), while 26.8% of the learners claimed that they never feel nervous when they have to speak in the classroom. The majority of the respondents (60.0%) claimed that it is only sometimes that they feel nervous. Nervousness in classroom speaking is indicative of communication apprehension, and the implication of these results is that a degree of communication apprehension exists in these learners' classrooms.

Table 4.3: Learners' reactions to nervousness when speaking in the classroom

Question	Yes		No	
	Fr.	%	Fr.	%
3. What do you do when you feel nervous and you are made to speak in the class?				
I cry out loud	8	3.4	227	96.6
I talk or say something with fear	157	66.8	78	33.2

I run out of the class	7	3.0	228	97.0
I pretend not to know	73	31.1	162	68.9

The question in this table also refers to learners' nervousness, but focuses on the effect that being nervous has on the learners. All the reactions listed in Table 4.3 purposely tend towards the negative in order to determine the extent of the learners' communication apprehension. For 'crying out loud', the majority of the learners (96.6%) responded in the negative. The researcher has witnessed this reaction personally, and was interested to know how pervasive it is amongst learners. For the respondents in this study, it seemed not to be a common reaction. In answer to 'speaking with fear', the majority (66.8%) responded in the affirmative. The majority of learners (97.0%) claimed that they do not run out of the class when they feel nervous, while 68.9% of the learners claimed that they do not pretend not to know. However, while in the minority, some learners are prone to negative behaviours when they feel nervous about speaking in the classroom, highlighting the need for remedial steps to be taken to make their classroom more conducive for communicating.

Table 4.4: Learners' fear of attending lessons

<i>Question</i>	<i>Always</i>		<i>Never</i>		<i>Sometimes</i>	
	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>
4. Are you afraid to attend lessons?	9	3.8	176	74.9	50	21.3

It is possible for learners to feel anxious when they perceive the classroom climate to be negative, or if they are not entirely comfortable. The majority of learners in this study (74.9%) claimed that they are not afraid to attend lessons. These learners, therefore, are not affected to an extent of wishing to stay away from the classroom. A sizeable percentage (21.3%), though in the minority, claimed to sometimes feel fear when they have to attend lessons, signifying a presence of apprehension and negative classroom climate.

Table 4.5: Learners' communication patterns

Question	Always		Sometimes		Never		Didn't answer	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
6. I speak only when I am asked by the teacher to say something.	39	16.6	150	63.8	45	19.1	1	0.4

This question attempted to establish whether learners feel free to speak of their own accord in the classroom, without needing to be prompted by the teacher. The majority of the learners (63.8%) claimed that only sometimes do they speak when prompted by the teacher, while 16.6% answered that they always speak only when the teacher asks, and 19.1% never speak only when asked by the teacher. That it is only sometimes that the majority of the learners speak when prompted implies that there might be other factors influencing their communication patterns, which can only be guessed at.

Table 4.6: Learners' reactions when they fail to understand lessans

Question	Always		Never		Sometimes	
	Fr.	%	Fr.	%	Fr.	%
7. What do you do when you do not understand the lesson?						
I leave the class	4	1.7	225	95.7	6	2.6
I keep quiet	37	15.7	126	53.6	76	32.3
I ask questions	155	66.0	16	6.8	64	27.2

When learners do not understand the lesson, they should be able to inform the teacher, or ask questions, which more than half of the learners in this study (66.0%) claimed to do. However, 53.6% of the learners claimed that they do not keep quiet, while 95.7% claimed that they do not resort to leaving the classroom. These results would seem to suggest that the level of communication apprehension is not too high, since learners are willing to ask questions.

Table 4.7: Causes for learners' communication discomfort

Question	Yes		No		Sometimes	
	Fr.	%	Fr.	%	Fr.	%
B. What makes you feel uncomfortable to communicate in the classroom?						
The teacher's personality	60	25.5	116	49.4	59	25.1
I am naturally shy	51	21.7	136	57.9	48	20.4
The classroom atmosphere	22	9.4	133	56.6	80	30.4
The other learners' reaction when I make a mistake	102	43.4	61	26.0	72	30.6
Other reasons: specify	24	10.2			29	12.3

The nature of classroom communication can be public, meaning that a number of factors influence how a learner communicates, namely, other learners, the teacher, and the learner him/herself. The question in Table 7 focuses on these aspects and how they can hinder communication.

According to Simon (2000:105), research into attitudes towards science using a range of components in their measures of attitudes have included, amongst others, the perception of learners of the science teacher. The teacher's personality can impact on learners' willingness to communicate in the classroom. Learners need to feel relaxed with a teacher, to feel that they can trust him/her, and that they can turn to the teacher for help without fear of ridicule or any negative sentiments. In this study, a high percentage of the learners (49.4%) reject the statement that the teacher's personality makes them uncomfortable to communicate in the classroom. This suggests that they are relatively comfortable with their teachers, and find interaction, and thus communication in the classroom, not difficult. Learners who had a problem with the teacher's personality made up 25.5% of the total, while learners who claimed that it was a problem some of the time made up 25.1% of the total. The implication of these results is that the teacher's personality does affect the communication in the classroom. Teachers need to be made aware of

what aspects of themselves could affect the communication ability of their learners, because they might not be aware of it. The traditional learner-teacher relationship in which the teacher is the dominating authoritative figure, and how the teachers play this role could, together with their personalities, affect the communication of learners.

Sometimes the personality of the learners can be the cause of communication apprehension in the classroom. The personality factor focused on in this study is shyness. Of the learners who took part in the study, 57.9% claimed that being shy does not impact negatively on their ability to communicate in the classroom, although 21.7% responded in the affirmative, and 20.4% of the learners responded that only sometimes does shyness affect their ability to communicate.

Creating a classroom atmosphere which is conducive to learning is largely the teacher's duty. According to Kyriacou (1991:65), the type of classroom climate generally considered to best facilitate learner learning is one that is purposeful, task-oriented, relaxed, warm, supportive and has a sense of order. This climate establishes and maintains positive attitudes and motivation, which will in turn encourage participation in lessons, and communication during those lessons. In this study, the majority of learners (56.6%) disclaimed that the classroom climate is not conducive, suggesting that they do not feel hindered from communication by the atmosphere in the classroom.

Simon (2000:111) states that several studies have indicated the influence of classroom environment as a significant determinant of learners' attitude toward science teaching. A study by Myers and Fouts (1992) found that the most positive attitudes were associated with a high level of involvement, personal support, strong positive relationships with classmates and the use of various teaching strategies and learning activities. The communication factor in all these activities is strong, leading one to infer that good communication leads to a positive attitude about the subject, and that having a positive attitude towards science might lead learners to better classroom communication practices.

Sotto (1994:151) claims that one of the constraints on participation in the classroom is the learners' concern about the reaction of other learners, sometimes more concerned than they are with the reaction of the teacher. In this study, a high percentage of respondents (43.4%) claimed that they are afraid of fellow learners' reaction when they make a mistake. Learners could be anxious about being made to feel unintelligent and ridiculous if they make mistakes in front of their peers. Fellow learners are therefore a contributory factor in classroom communication apprehension.

Section C: Group discussion in class

Table 4.8: Group discussions

<i>Question</i>	<i>Yes</i>		<i>No</i>		<i>Didn't answer</i>	
	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>
Do you like participating in group discussions?	204	86.8	28	11.9	3	1.2
Do you become tense and nervous while participating in group discussions?	30	12.8	202	86.0	3	1.2
Do you like to get involved in group work?	200	85.1	32	13.6	3	1.2
Are you calm and relaxed while participating in group discussions?	163	69.4	69	29.4	3	1.2
Is there anything that makes you feel tense and nervous when engaging in group discussions?	61	26.0	171	72.8	3	1.2

According to Bentley and Watts (1992:57) group work is very important in the learning of science because of the extensive group work science involves. Learners need to be taught group communication skills, and in order to understand scientific ideas they need to share those ideas (Bentley & Watts, 1992:57).

Taking part in group discussion and activities is an important aspect of classroom communication. A reluctance to take part in group discussion could be a sign of communication apprehension. The results indicate that the majority of learners who took part in this study do not feel negative towards group discussion, implying favourable conditions for classroom communication.

The majority of learners (86.8%) were keen on participating in group discussions; 86.0% of the learners claimed not to experience tension and nervousness when taking part in group discussions; 85.1% of the learners were in favour of group work; 69.4% of the learners claimed to be calm and relaxed during group discussions; and 72.8% of the learners claimed not to be tense and nervous when taking part in group discussions. These results indicate that learners who took part in this study like and enjoy group discussions. Enjoyment of group interaction signifies a favourable climate for classroom communication. According to Whitaker (1993), the importance of group work includes: creating a climate in which learners can work with a sense of security and self-confidence; facilitating the growth of understanding by offering the optimum opportunity for learners to talk reflectively with each other; promoting a spirit of co-operation and mutual respect. Learners are therefore to be encouraged to work together in groups. That the majority of learners are in favour of group work suggests that the learners experience relatively little communication apprehension during group work.

Section D: Teacher-learner or learner-learner conversation in class

Table 4.9: Classroom conversations

<i>Question</i>	<i>Yes</i>		<i>No</i>		<i>Didn't answer</i>	
	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>
I have no fear of speaking out in classroom conversations	160	68.1	68	28.9	7	2.9

I am very tense and nervous in classroom conversations	55	23.4	174	74.0	6	2.5
While talking to strange people in class, I feel very relaxed	117	49.8	113	48.1	5	2.1
I am afraid to speak out in classroom conversations	44	18.7	179	76.2	12	5.1
I become self-conscious when I have to speak in class	127	54.0	96	40.9	12	5.1

The statements in table 4.9 focus on classroom conversations, as they can be indicative of communication apprehension. According to Seiler *et al.* (1984:59), communication apprehension can involve a fear not only of public speaking, but also of informal and conversational speaking. The results of this study indicate that the majority of the learners that took part in this study have relatively little fear of classroom conversations, with 68.1% of the learners claiming that they have no fear of taking part in classroom conversations, while 74.0% claimed that they experience no tension and nervousness in classroom conversations. With regard to speaking to strange people in the class, 49.8% claimed to be relaxed, while 48.1% claimed not to be relaxed. It is possible that a strange person causes anxiety for the 48.1% because the learners are not used to that person. On the other hand, the other learners (49.8%) could be feeling relaxed with a stranger because they don't associate teacher-related anxieties with that person, such as, answering correctly, impressing the teacher, dealing with the teacher on a daily basis. Sotito (1994:151) states that we speak most readily to a person when we sense that that person will not evaluate us, especially in a classroom. However, 76.2% of the learners claimed not to be afraid of speaking in classroom conversations. These results indicate a favourable climate for classroom conversations.

Section E: Giving a speech/presentation in class

Table 4.10: Learners' reactions to giving speeches and presentations

<i>Question</i>	<i>Yes</i>		<i>No</i>		<i>Not answer</i>	
	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>	<i>Fr.</i>	<i>%</i>
I feel relaxed when giving a speech in class.	107	45.5	125	53.2	3	1.3
While giving a speech, I get nervous and forget some facts that I really know.	130	55.3	102	43.4	3	1.3
I have no fear of giving a speech in class.	136	57.9	96	40.9	3	1.2
I face the prospect of giving a speech with confidence.	147	62.6	85	36.2	3	1.2

Speeches and presentations encourage learners to share ideas and to learn from one another. Learners are also encouraged to get used to communicating in front of others, and perhaps to minimise their communication apprehension. Speeches and presentations can easily induce anxiety and fear because attention is focused on the person giving the speech or presentation, and could make the learner feel vulnerable and exposed to criticism and scrutiny. This vulnerability and exposure could be some of the reasons why the majority of learners (53.2%) claimed not to feel relaxed in giving a speech, and also why 55.3% of the learners claimed to be nervous and forgetful of facts they know. However, 57.9% claimed to have no fear of giving speeches, and 62.6% claimed to feel confident in giving speeches.

These results suggest that overall, the majority of the learners welcome the prospect of giving speeches and presentations in front of their peers. However, the majority of the learners still indicated the presence of tension and nervousness when actually giving the speech. Therefore, the fact that they welcome the chance to interact in this manner indicates a positive climate for classroom communication, but also indicates a need to remedy the negative aspects associated with giving speeches and presentations.

4.3.2 RESULTS OF THE INTERVIEWS

The aim of interviewing the teachers was to find out whether their method of teaching encourages learners' participation in the classroom, and which teaching methods and techniques they use. Before the actual interviewing process began, and even during interviewing, teachers often asked for clarification of what was expected of them, asked for some of the terms to be explained (e.g. CA), and wanted to know the purpose of the interviews before they felt comfortable in responding to the questions. The following discussion includes the data of the interviews in tabular form.

Table 4.11: Type of classroom communication taking place in the science classroom (Question 1)

<i>Question 1</i>	<i>Fr</i>
a) Teacher asks questions and students give answers	3
b) Students work in groups and discuss the work together	3
c) Students ask the teacher questions	-
d) Teacher speaks alone and explains the work	-
e) A mixture of all the options	9

The respondents did not only choose one option when answering the questions, but often chose more than one, which accounts for the total frequency not adding up to 12, which is the number of teachers interviewed. The majority of respondents claim that they use a mixture of the types of communication listed (Table 4.11), although some also specified that they prefer question-and-answer type of communication, as well as group work and discussion. Science being more of a factual subject than open and giving space for individual opinions, it is to be expected that teachers ask questions, to which there are specific answers. Group work would mostly likely be more prominent in experiments and projects. However, current teaching methods do not encourage that learners be passive recipients of learning, therefore,

teachers would try to have a more balanced communication repertoire in their classrooms.

Table 4.12: The frequency with which different types of communication take place (Question 2)

Question 2	Sometimes	Always	Seldom	Never
a) Teacher asks questions and students give answers	5	4	-	-
b) Students work in groups and discuss the work together	4	-	1	1
c) Students ask the teacher questions	4	-	2	-
d) Teacher speaks alone and explains the work	1	4	1	-
e) A mixture of all the options	2	-	-	-

In question 2 (Table 4.12), the teachers were asked to state how frequently each individual type of communication took place in their classrooms, whereas in the first question they had to state whether they used the types of communication listed. For some their responses for the two questions would not correlate; where in the first question a teacher had claimed to use a mixture of communication types, in the second question they might claim to never use a certain type of activity, which provides one with different pictures of the communication activities in their classrooms. Again, the question-and-answer type of activity was dominant, as in Question 1. The learners also seem to be engaged actively in communicative activities, as reflected in the responses to (b) and (c) in Table 4.12, while an equal number of respondents claim that they dominate the classroom communication (cf. d in Table 4.12).

A prominent difference in their responses was that group work was mostly by teachers from black schools. But again, most of them claimed not to like it because it gave the learners an opportunity to play and chat amongst themselves, and disrupt lessons. A possible explanation for this difference

could be the large numbers of learners in their classrooms; it might be easier for them to address all learners than individuals. Teachers from multicultural and Afrikaans medium schools were not partial to group work, also citing disruption and the inattentiveness of students as a reason for that.

Table 4.13: Types of communication teachers apply in the science classroom (Question 3)

<i>Question 3</i>	<i>Frequency</i>
Debates	1
Group discussion	7
Teacher explanation	6
Students ask questions	8
Teacher ask questions and students respond	9
Other	-

In determining the types of communication the teachers applied in their classrooms, most of the teachers claimed that they hardly ever let their learners debate in the classroom. The disruptive nature of this activity was mentioned. Most of the teachers claimed to opt for group discussions, teacher explanations, as well as learners asking the questions. Some did not encourage learners to ask questions, especially the teachers who were struggling with discipline in their classrooms, as the learners took the chance to make fun and make other learners laugh.

Table 4.14: Frequency with which these types of communication take place in the classroom (Question 4)

<i>Frequency</i>	<i>Debate</i>	<i>Teacher talking</i>	<i>Learners talking</i>	<i>Group discussion</i>	<i>Other(demonstration)</i>
In every lesson	-	5	-	-	
Half the lesson	-	1	5	1	1
Sometimes	2	2	3	6	
Never	3	-	-	-	
Seldom	1	-	-	1	
Total	3	8	8	8	1

The frequency with which these types of communication take place ranged from the highest to the lowest occurrence:

- teacher talking
- learners talking
- group discussions
- debate.

The teachers felt that they had to do most of the talking before the learners could understand, and be able to take part in the discussions or to ask questions. And the teachers felt that it was easier to control the classroom when they talked for the greater part. Some teachers also expressed concerns about time, that in the time allocated for each lesson, there was not enough time to do some activities, such as group discussions and debates.

Table 4.15: Ways in which the participation of learners is encouraged (Question 5)

<i>Question 5</i>	<i>Frequency</i>
By asking questions	11
By giving them topics to discuss	4
Through mutual motivational discussions	6
Other	2

Most of the teachers interviewed claimed to encourage participation in classroom communication by asking questions, which correlates with their responses to Question 1 and 2 (cf. Tables 4.11 and 4.12). Still a considerable number claimed to encourage participation through motivational discussions. A few teachers claimed to give learners topics to discuss. The teachers felt that they are more able to gauge the learners' progress through questioning them, as they would also have an idea of whether to continue with a lesson or to explain further.

Table 4.16: Factors influencing participation in the science classroom (Question 6)

Shyness	Low level of CA	High level of CA	Lack of self-confidence	Teacher's expectations	Unpreparedness	Classroom climate
7	-	1	7	-	3	-

The more frequently chosen factors which influence the participation of learners in classroom communication was lack of self-confidence, shyness, and unpreparedness for work (cf. Table 4.17). The teachers cited a lack of language proficiency as one of the reasons which make learners lack confidence, and feel reluctant to speak in front of their peers. The teachers who cited shyness as a factor said that they make attempts to draw out the shy learners through a friendly atmosphere in the classroom. However, unpreparedness for work was cited as a factor quite often. These factors make it difficult for the teachers to have a meaningful interaction with the learners as these factors make them reluctant to take part in classroom learning activities and communication.

These results indicate that teachers are willing to have their learners take part in classroom communication, but that there seem to be other reasons which hinder them. The time allocated for each lesson does not allow for a multitude of teaching methods and styles. Disciplinary issues also affect the nature of classroom communication between the learners and the teachers. Large numbers in the classroom do not make it desirable to have activities such as group discussions as they can easily get out of hand. Some factors are more learner-specific, such as personality traits (e.g. shyness), and not preparing for the lessons, either by doing the homework, or preparing in advance what they were told to.

4.5 SUMMARY

The results of this study have indicated that the learners and the teachers experience classroom communication differently, and the factors that affect them are different.

The learners seem to experience high levels of communication apprehension, but this cannot be generalised for all communicative situations in the classrooms. The learners in this study seemed to be more disposed towards group work than individual work, but the teachers were not truly supportive of group work, but more of a whole-class scenario. The learners also did not seem to exhibit drastic behaviour when classroom communication fails and when they fail to understand the lesson, although their choices indicated that there is still a medium to high level of apprehension. The teachers were willing to promote classroom communication, but other factors such as disruptive behaviour from the learners made them reluctant to encourage extensive communication amongst the learners.

CHAPTER 5

FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the findings and recommendations which are based on the results presented in the previous chapter. The objectives of this research, stated in chapter 1, are:

- to determine the nature and extent to which secondary school science learners participate in classroom communication
- to identify the factors that influence the participation of secondary school science learners in classroom communication and to determine the extent to which these factors influence them
- to determine how secondary school science learners' participation in classroom communication can be improved where necessary.

5.2 SUMMARY

Before presenting the findings of this study, the previous chapters are reviewed in short detail. Chapter 1 identified that the nature and extent of classroom communication influence the quality of learning. The learners' levels of participation differ, therefore, it was identified as important that factors affecting classroom participation should be identified. Chapter 2 focused on the factors that affect classroom communication. In this chapter Vreken's (1996) Classroom Communication Model was also discussed and the manner in which it can be applied in conjunction with OBE in the classroom. In chapter 3 the focus was on the manner in which teachers can positively influence the participation of the learners. It also gave didactical guidelines which are effective in teaching. Chapter 4 provided the method of

research, which detailed the population, the instrumentation and method of analysis used in this research. An analysis of learner questionnaires and teacher interviews are carried out in detail. This chapter rounds off the research by presenting the findings based on the analysis, as well as the recommendations for future research.

5.3 FINDINGS

The findings are presented according to the aims which were set out at the beginning of this study.

5.3.1 THE NATURE AND EXTENT TO WHICH SCIENCE LEARNERS PARTICIPATE IN CLASSROOM COMMUNICATION

The learners in this study displayed a lack of appreciation for their teachers' questions. Learners also reported nervousness when speaking in the classroom, even if this happens some of the time, but the nervousness induces fear. The extent of the learners' communication apprehension (CA) is not such that it would be irreparable, as the results indicated that mostly they do not resort to drastic actions, e.g. leaving the class and crying out loud. However, learners in this study seem to be more reliant on the teacher to be prompted to interact. They do not seem to be comfortable enough to initiate communication on their own. Thus, it is the finding of this study that the nature of classroom interaction, while not in a desperate situation, can be improved and the learners' apprehension relaxed.

5.3.2 FACTORS WHICH INFLUENCE CLASSROOM PARTICIPATION

The classroom atmosphere which in this study proved to be inhibiting for interaction especially as learners worry about the impression the teacher and other learners will have about them. Krashen (1982:46) recognised the

affective classroom when he formulated the affective filter hypothesis. According to Krashen (1982:46), "the filter is that part of the internal processing system that subconsciously screens incoming language based on what psychologists call 'affect' ... the learners' attitudes, needs, motives and emotional state. If learners feel threatened or uncomfortable, they will not feel free to interact. Hence the attitudes of the teacher can also have a marked influence on learner participation in classroom communication. Le Roux (1996:41) puts forward that if a learner who is afraid of how the teacher will react to his/her contributions to the discussion will not be prepared to take risks and therefore will not interact readily. It stands to reason that the affective atmosphere will have a direct influence on the quality of interaction in the sense that a learner will not be eager to assume his/her role in a discussion if the classroom atmosphere is negative and debilitating.

5.3.3 SUGGESTION ON HOW PARTICIPATION CAN BE IMPROVED

According to the literature study and the empirical study, participation on both the teachers' and the learners' parts can be improved by paying attention to the following:

- Classroom climate: It is the teacher's duty to ensure that the learners feel relaxed, encouraged and secure enough to make mistakes during classroom interaction without fear of ridicule.
- Teacher personality: Teachers need to be open-minded and must be able to see things from the learners' perspective. This will enhance the atmosphere of openness. Teachers should also display a good sense of humour and also enjoy teaching. This means that both the teacher and the learner can laugh together and this may encourage companionship and mutual trust. According to Cruickshank *et al.* (1995:317), humour can diffuse tension, communicate the teacher's security and confidence, promote trust and reduce discipline problems. Humour and companionship

in the learning environment are perceived as being important aspects, but should be applied and conducted with a lot of wisdom by the teacher.

- **Group discussion:** Teachers should encourage group work because it gives the learners a chance to share ideas and to interact. According to Bany and Johnson (1964:31) a group exists when two or more persons have as one quality of their relationship some interdependence and possess some recognisable unity. The nature of classroom groups is influenced by the time learners spend with each other (e.g. being together from previous grades) and the relationships that are formed as a result of that association. A bond of common interests and affection develops. These relationships affect learning motivation, and therefore, classroom communication.
- **Unpreparedness:** It is recommended practice in teaching that the teachers should prepare learners for forthcoming lessons through homework. Homework allows learners to revise the work they have already done, and to prepare for the work which they will be doing. Teachers, therefore, have to enforce learners to do the homework, and in this way, teachers will not only be spoon-feeding learners; they will also be actively taking part in their learning, and will be able to take part in classroom communicative activities.
- **Fear of other learners' reaction and lack of self-confidence:** Teachers have to cultivate an atmosphere in which learners will not be afraid to make mistakes in front of other learners. If learners are made to speak out in class on a regular basis, they will get used to making mistakes, and accepting that as part of the learning process. It also depends on how the teacher handles the situation, because often learners take the cue from their teacher on how to react to certain incidents in the classroom. In this way, learners will accept that they might not always be correct in what they say, but might possibly gain their confidence from the practice of speaking in class.

- **Shyness:** The causes of shyness have been discussed in some detail (cf. section 2.4.2.2 in chapter 2). Some causes might be more deeply ingrained than others, for example, shyness that has been caused by cultural values might be more ingrained, and more difficult for the teacher to deal with. But the teacher can try to draw a learner out by gradually increasing the level of his/her participation in the classroom. The learner will gradually get to a point where the teacher does not have to actively engage his/her participation, but where the learner will be a voluntary participant in the communicative activities of classroom learning.

5.4 RECOMMENDATIONS FOR FURTHER RESEARCH

In future research projects, the following aspects can be taken into consideration:

- The size of the sample population can be increased or varied by selecting subjects that are outside the Potchefstroom District. The selection of learners might also include larger numbers instead of 20 from each classroom, while more teachers can participate in the study to give a more extensive picture of classroom communication and communication apprehension in science classrooms.
- The method of research could also be varied. Instead of conducting a survey through a questionnaire, a method that could give a different point of view could be employed, such as classroom observations.
- Studies on other school subjects could be conducted and a comparison of communication apprehension in the different subjects could yield interesting results.

5.5 SUMMARY

This chapter presented the results of this research based on the findings in the previous chapter. It also provided answers to the questions which were posed in the first chapter, which were the focus of this study. The findings of this study cannot be generalised. It was found that there is still much that is unsatisfactory in classroom communication in science classrooms. It was also suggested that the teachers can and should act in order to improve classroom communication, as well as the interaction between themselves and learners, and amongst the learners themselves. Recommendations for further research were provided, particularly regarding the scope and focus of future studies on the subject of classroom communication.

ABSTRACT

Key terms: classroom interaction, classroom communication, secondary school, science teaching, science education.

Teaching is a dynamic process involving teachers and learners in meaningful and collaborative efforts. Therefore, interacting with learners in the classroom is of vital importance to the teacher in order to enhance the teaching and learning process.

The purpose of this research is to determine the factors influencing the participation of secondary school science learners in classroom communication (CC). The study was conducted in all the secondary schools in the Potchefstroom area.

A questionnaire was compiled to investigate learners' level of participation in science CC. An interview guide for teachers was also compiled. A total of 235 Grade 8 learners were randomly selected from twelve (12) schools.

The analysis showed that the teachers used primarily teaching-learning procedures that did not conform to the requirements of OBE. The reason is not necessarily that they are not well-informed on OBE principles, but the practicality of their teaching situations necessitated it. In the process, learners do not acquire enough knowledge and skills needed for science classroom learning activities. This fails the main aim of enabling learners to participate in classroom communication. The limited use of communicative strategies in science teaching-learning can be attributed to a number of possible reasons, amongst which are: communication apprehension, poor language development, culture/heredity, and the types of classroom reinforcements and teaching styles.

This study also focused on the factors that can positively influence classroom communication. An interview was conducted with teachers with the help of an interview guide. The results indicated that teachers, although generally warm and accepting, seem to be inflexible and lack dynamism when presenting the lesson, which in turn affects learners' participation in the classroom.

OPSOMMING

Sleutelwoorde: klaskamerinteraksie, klaskamerkommunikasie, hoërskole, onderwys van natuurwetenskap, onderrig van natuurwetenskap.

Onderwys is 'n dinamiese proses waarin onderwysers en leerders sinvol saamwerk. Interaksie met die leerders in die klaskamer is daarom van wesenlike belang vir enige onderwyser wat die onderrigleerproses wil verbeter.

Die doel van hierdie studie was om die faktore te bepaal wat die deelname van hoërskoolleerders in natuurwetenskapklas beïnvloed. 'n Vraelys is opgestel om dit te probeer bepaal. Die vraelys is ingevul deur 235 graad 8-leerders wat ewekansig gekies is uit twaalf skole. 'n Onderhoudskedule is opgestel om onderhoude met die leerders se natuurwetenskaponderwysers te voer.

Die ontleding van die resultate het getoon dat die onderwysers hoofsaaklik onderrigleermetodes gebruik het wat nie aan die vereistes van uitkomsgebaseerde onderrig (UGO) voldoen nie. In hierdie proses het die leerdes nie die nodige kennis en vaardighede vir leeraktiwiteite in die wetenskapklas verwerf nie. Die hoofdoel, nl. om die leerders in staat te stel om deel te neem aan kommunikasie in die klas, kon daardeur nie bereik word nie. Die beperkte gebruik van interaktiewe onderrigleerstrategieë in die wetenskapklas kan toegeskryf word aan 'n hele aantal faktore, onder andere: vrees vir deelname, swak taalontwikkeling, kultuur en erfikheid, die soorte versterking in die klas en onderrigstyl.

Hierdie studie het ook gefokus op die faktore wat klaskamerinteraksie positief kan beïnvloede. Vir hierdie doel is onderhoude met onderwysers gevoer met behulp van 'n onderhoudskedule. Die resultate dui aan dat, hoewel die onderwysers oor die algemeen warm en aanvaarbaar optree, hulle skynbaar

onbuigsam en ondinamies is wanneer hulle 'n les aanbied. Dit raak die leerders se deelname aan die klas nadelig.

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APPENDIX A

QUESTIONNAIRE FOR STUDENTS

This questionnaire is designed for Grade 8 science students to investigate their participation in science classroom communication.

Instructions

Read the questions provided below carefully and answer them honestly.
 Tick (✓) only one answer per each question.
 Please use a pen (biro) only. Do not use any pencil.

Section A: General information

School (e.g. school 3)

0	3

1-2

Number of the student completing this questionnaire
 . e.g. 1st student

0	1

3-4

Gender

M	1	
F	2	

5

Section B: General participation in class

1. I appreciate it when the teacher asks a lot of questions.

- a) Always
- b) Sometimes
- c) Not at all

1
2
3

6

2. I get nervous when I have to say something in the class.

- a) Always
- b) Sometimes
- c) Never

1
2
3

7

3. What do you do when you feel nervous and you are made to speak in the class?

- a) I cry out loud
- b) I talk or say something with fear
- c) I run out of the class
- d) I pretend not to know

	Yes	No
1		
2		
3		
4		

8
9
10
11

4. Are you afraid to attend lessons?

- a) Always
- b) Never
- c) Sometimes

1
2
3

12

5. If Yes, what makes you afraid?

13

6. I speak only when I am asked by the teacher to say something.

- a) Always
- b) Sometimes
- c) Never

1
2
3

14

7. What do you do when you do not understand the lesson?

- a) I leave the class.
- b) I keep quiet.
- c) I ask questions.

Yes	No	Sometimes
1	2	3

15
16
17

7. What makes you feel uncomfortable to communicate in the classroom?

- a) The teachers' personality.
- b) I am naturally shy.
- c) The classroom atmosphere.
- d) The other students' reaction when I make a mistake.
- e) Other reasons: specify.

Yes	No	Sometimes
1	2	3

18
19
20
21
22

Section C: Group discussions in class

Do you like participating in group discussions?

Do you become tense and nervous while participating in group discussions?

Do you like to get involved in group work?

Are you calm and relaxed while participating in group discussions?

Is there anything that makes you feel tense and nervous when engaging in group discussions?

Yes	No

23

24

25

26

27

Section D: Teacher-student or student-student conversations in class

I have no fear of speaking in classroom conversations.

I am very tense and nervous in classroom conversations.

While talking to strange people in class, I feel very relaxed.

I am afraid to speak out in classroom conversations.

I become self-conscious when I have to speak in class.

Yes	No

28

29

30

31

32

Section E: Giving a speech/presentation in class

I feel relaxed when giving a speech in class.

While giving a speech, I get nervous and forget some facts that I really know.

I have no fear of giving a speech in class.

I face the prospects of giving a speech with confidence.

Yes	No

33

34

35

36

APPENDIX B

INTERVIEW GUIDE FOR TEACHERS

1. What type of classroom communication takes place in your class? For example,
 - a) Teacher asks a lot of questions and students give answers
 - b) Students work in groups and discuss the work together
 - c) Students ask the teacher questions
 - d) Teacher speaks alone and explains the work
 - e) A mixture of a-d

2. How often do these types of communication (in 1 above) take place in your class?

	(a)	(b)	(c)	(d)	(e)
Sometimes					
Always					
Seldom					
Never					

3. What types of communication do you apply in your classroom? For example,

- a) Debates
- b) Group discussion (small groups of 2-4, or larger groups)
- c) Teacher explanation
- d) Students ask questions
- e) Teacher ask questions and students respond
- f) Other

4. How often do these (in 3 above) take place in your class?

Frequency	Debate	Teacher talking	Students talking	Group discussions	Other
In every lesson					
Half the lesson					
Sometimes					
Never					
Seldomly					

5. In which ways do you encourage participation of students in the classroom?

- a) By asking questions
- b) By giving them topics to discuss
- c) Through mutual motivational discussions
- d) Other

6. Which of the following factors influence participation of students in your classroom communication? OR Why do some learners not want to (or like) to participate in classroom communication?

Shyness	Low level of CA	High level of CA	Lack of self confidence	Teacher's expectations	unpreparedness for work	Classroom climate

7. In your opinion, to what extent or how can each of these factors (in 6 above) influence communication in the classroom?

APPENDIX C
LETTER REQUIRING PERMISSION TO CONDUCT RESEARCH

PO BOX 20967
NOORDBRUG
2522
21ST MAY 2000

THE PRINCIPAL,

Dear Sir/Madam,


PERMISSION TO CONDUCT RESEARCH AT YOUR SCHOOL

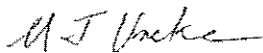
I the undersigned, is a student of Potchefstroom University for Christian Higher Education. I am currently registered as a M.Ed student. Following my nature of study I am obliged to carry out research on your learners to enable me come up with findings that will possibly improve the teaching-learning processes in the Outcomes Based Education (OBE).

May you kindly permit me to use your learners for this crucial study.

Thank you very much for your anticipated co-operation.

Yours Sincerely,


Mrs A.M.M Lepholleise


(Prof N.J. VREKEN : Study leader)

APPENDIX C
LETTER REQUIRING PERMISSION TO CONDUCT RESEARCH

PO BOX 20937

NOORDSRUG

2522

21ST MAY 2000

THE PRINCIPAL,

Dear Sir/Madam,

PERMISSION TO CONDUCT RESEARCH AT YOUR SCHOOL

I the undersigned, is a student of Potchefstroom University for Christian Higher Education. I am currently registered as a M.Ed student. Following my nature of study I am obliged to carry out research on your learners to enable me come up with findings that will possibly improve the teaching-learning processes in the Outcomes Based Education (OBE)

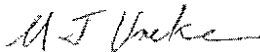
May you kindly permit me to use your learners for this crucial study.

Thank you very much for your anticipated co-operation.

Yours Sincerely,



Mrs A.M.M. Lepholletse



(Prof N.J. VREKEN, Study leader)

APPENDIX D
LETTER GRANTING PERMISSION TO CONDUCT RESEARCH



DEPARTMENT OF EDUCATION
NORTH WEST PROVINCE

POTCHEFSTROOM DISTRICT OFFICE

P/BAG X919, POTCHEFSTROOM 2520, GREYLING STREET, TEEMANE BUILDING
PHONE (018) 2973810 / 2998295 - FAX (018) 2977439

23 May, 2000

Mrs A M M Lepholletse
School for teacher training
P/Bag X6001
POTCHEFSTROOM

RESEARCH AT SCHOOLS

Your letter dated 21 May 2000 refers

Permission to make use of learners during your research is granted.

Arrangements must be made with individual Principals of schools involved.

We trust that arrangements will be made with principals and teachers in such a way that normal schooling activities will not be interrupted.

Please show this letter to principals when you visit their schools

We wish you success in your studies.


D BOSMAN
DISTRICT MANAGER

RESEARCH SCHOOLS/
D BOSMAN / m vdmwre

APPENDIX E

LIST OF SCHOOLS IN THE POTCHEFSTROOM DISTRICT WHERE RESEARCH WAS CONDUCTED

Black schools:

Boitshoko High School
Resolofetse High School
Seiphemelo High School
Tlokwe High School

Multicultural schools:

Ferdinand Postma High School
Potchefstroom Secondary School
Potchefstroom Boys High School
Potchesfroom Girls High School
Promosa Secondary School

Afrikaans schools:

Gymnasium Hoërskool
Potchefstroom Hoër Tegniese Skool
Volkskool