CHAPTER 5

THEORETICAL FRAMEWORK OF THE STUDY

5.1 INTRODUCTION

The theoretical framework supporting this investigation lies vested in Moore's theory of transactional distance (hereafter Moore's theory) with a strong emphasis on dialogue. In dialogue, everyone brings his or her experiences, characteristics, etc., in order to reach an amicable solution. In the setting of the current study, the solution of ***performance excellence*** in the department of defence (DOD) distance learning is envisaged. Performance excellence is composed of programme structure/design and development, subject structure/student assessment and programme evaluation, student support, motivation, learning theories, and other factors, qualities and characteristics associated with transactional distance supposed to be found in any ideal instructional design. This is further displayed in figure 5.1 below. However, the theoretical framework of the study relied very heavily on curriculum development, instructional design, subject structure, and/or programme evaluation applications supported by Moore's theory as applicable to the teaching and learning interactions.

In this chapter the aim is to suggest a theoretical framework around a number of instructional design models that is incorporated into Moore's theory. The next step is to design a conceptual framework from the theoretical framework. The conceptual framework is the model that is used to evaluate the DOD distance learning programmes of various institutions with regards to their Arms of Services (AoSs). The components used in assessing the design and effectiveness of DOD distance learning programmes emanate from this conceptual framework. Again, the emphasis is on dialogue.

5.1.1 Performance excellence

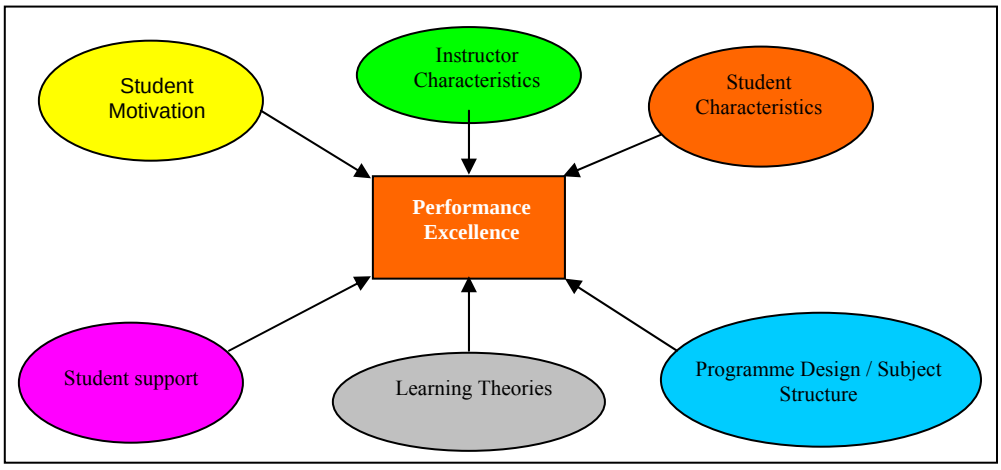

Figure 5.1: Conceptual framework of performance excellence

5.2 DEFINITION OF A THEORETICAL FRAMEWORK

A theoretical framework is a structured organization of ideas supported by evidence so as to produce a valid explanation. It does so by establishing a relationship between more than one concept and variable. According to Mayer and Greenwood (1980:121):

> "A theoretical framework is a causal orientation toward the contemplated study. As such, it formulates a detailed model of the given … problem and its proposed solution. It also furnishes a supportive framework for the model, based on the empirical evidence garnered from prior research and/or experience plus the value assumptions underlying the proposed solutions. The theoretical framework presents all this in relatively abstract terms. It identifies, defines and elaborates the concepts reflected in the … problem; it proposes solutions, and the various social forces impinging upon them. The theoretical framework may be thought of as a mental diagram, or map, which interrelates these concepts, showing where, when and how they fit together. The written statement of the theoretical framework is, therefore, the analyst's description and explanation of this conceptual map."

5.3 JUSTIFICATION OF A THEORETICAL FRAMEWORK

According to Mayer and Greenwood (1980:122), a theoretical framework provides a structure by specifying a relationship between two or more variables. At times, it is possible to specify the direction of the relationship (casual), whereas at times it is not be possible to do so. The former is often associated with quantitative research and the latter with qualitative research *(Ibid)*. The present study seek to establish a relationship of variables as spelled out in the instructional design, and as contained in the 'performance excellence' framework with the emphasis on dialogue. The search for these relationships is important in the investigation. Thus, the proposed structure that the theoretical framework provides identifies the boundaries of the research *(Ibid)*.

5.4 INSTRUCTIONAL DESIGN (ID) SYSTEM THEORY

Basically, instructional design (ID) is the process to create a learning programme (previously referred to as a course). Different authors formulated various definitions and other terms were used synonymously. The term *instructional design* has two meanings depending on the context in which it is used. In most cases the term refers to a specific subject field. According to Briggs (1970:[s.p.]), instructional design (as subject) could be described as:

> "The entire process of analysis of learning needs and goals and the development of a delivery system to meet the needs; includes development of instruction and instructional materials and activities; and tryout and revision of all instruction and student assessment activities".

A less-common use for the term is to refer to the design component of the instructional design procedure. As such, the terms that are used by various authors in the same context as instructional design are curriculum design, programme evaluation, and learning programme or instructional programme design. The terms 'instructional design' and 'instructional development' are used interchangeably in the literature of instructional technology (Kang, 2004:39).

However, Gagné**,** Briggs and Wager (1992:[s.p]) made a distinction between 'instructional system design' and 'instructional development'. 'Instructional system design' is the systematic process of planning instructional systems, while 'instructional development' is the process of implementing of plans (Gagné *et al*., 1992:20 cited by Kang, 2004:39).

According to Dick and Carey (1996:2), a contemporary view of instruction is that it is a systematic process in which every component is crucial to successful learning. This perspective is usually associated with the use of the systems approach to instructional design. The purpose of the systems approach is to bring about learning with its components being the instructors, the students, the instructional materials (or resources), and the learning environment. These components interact in order to achieve the goal of learning.

5.4.1 The Need for a Systems Approach

The need for a model for course and/or curriculum design (an instructional-systems approach) is that it provided the faculty (instructors/facilitators) with the access they needed in the process, retaining responsibility for teaching and academic content (Diamond, 1989:2). In the same vein, the academic administration of the institution support these activities and provide resources necessary and needed for these efforts to be successful. The systematic approach focuses, at the outset, on what the student wants, or is supposed to know or do when the instruction is concluded. Another reason for the system is the careful linkage between each component. Dick and Carey (1996:8) say that there is and should be a relationship between the instructional strategy and the desired learning outcomes.

5.4.2 Advantages of a Systems Approach

According to Diamond (1989:4), the advantages associated with a systems approach are the following:

a. It identifies the key factors that should be considered in a sequential order.
b. It serves as a procedural guide for those directing the project.

c. It allows those involved to understand where they are in the process and their role within it.

d. It improves efficiency by reducing duplication of effort and ensuring that critical questions are asked and alternative solutions explored.

5.4.3 Common Characteristics

Hannun and Briggs (1980), cited by Diamond (1989:4-5) identified the common characteristics in instructional design systems approach, as the following:

a. Planning, development, delivery, and evaluation of instruction are based on a systems theory.

b. Goals are based on an analysis of the environment of the system (for example), a year college would, and must, have different goals from those of a university).

c. Instructional objectives are stated in terms of performance.

d. The design of the programme is sensitive to the competencies of the students and of their short- and long-term academic goals.

e. Considerable attention is paid to planning instructional strategies and selecting media.

f. Evaluation is part of the design and revision process.

g. Students are measured and graded by their ability to achieve and master desired standards and criteria rather than by comparing one student with another.

5.5 TYPES OF INSTRUCTIONAL DESIGN (ID) APPROACHES

It emerges from the literature that teaching and learning instruction is normally designed, developed and implemented with a number of learning theories in mind. According to Schiffman (1995:[s.p.]), a solid foundation in learning theory is an essential element in the preparation of instructional system design because it permeated all dimensions of instructional system design. It therefore means that a teaching and learning instructional design will often be designed on one or specific learning theory foundation. Seels and Glascow (1998:179) is cited by Kang (2004:40), added that theories of learning and instruction are described as philosophical paradigm that affect design decisions. Thus, an instructional design should be understood as based on a certain learning theory as its learning wisdom.

There is no single systems-approach model for designing instruction. It is contended that there are two types of approaches that are developed in curriculum work (Smith & Lovat,

2003:113). The first is called normative because it provides a sequence of steps that should be used in any curriculum planning tasks. According to Smith and Lovat (2003:113) such approaches include the objectives model of Tyler (1949:63-82) and the rational models of Taba (1962) and Wheeler (1967), and have primarily technical interests of control.

The second type of approach is labelled descriptive, because it describes the actual steps undertaken by curriculum planners *(Ibid)*. Such approaches were provided by Walker (1971:[s.p.]), Stenhouse (1975:[s.p.]), Yinger (1979:[s.p.]), and Smith (1983:[s.p.]). These approaches do not only respond to the technical interests but also have interests in communication and the potential for critical curriculum work *(ibid)*. According to Diamond (1989:4), models designed by Briggs (1970), Gerlach and Ely (1980), Kemp (1977), and Russell and Johanningsmeir (1981) are representative that include these characteristics while focusing on course and lesson design.

5.5.1 The Normative Approaches

Tyler (1949) cited by Smith and Lovat (2003:114) puts forward an objective instructional design approach as follows:

a. Specify objectives.
b. Select learning experiences.
c. Organise learning experiences.
d. Implement learning experiences.
e. Evaluate.

Kelly (2004:14) points out that Tyler (1949) suggest that the curriculum must be seen as consisting of four elements and curriculum planning; therefore, it has four dimensions: objectives, content or subject matter, methods or procedures, and evaluation. In short, we must distinguish in our curriculum planning and development what we are hoping to achieve, the ground we are planning to cover in order to achieve it, the kinds of activities and methods that we consider likely to be most effective in helping us towards our goals and the devices we will use to evaluate what we have done. Kelly (2004:14-15) says that Tyler's (1949) own way of putting this point is to suggest that there are four fundamental questions which must be answered in developing any curriculum and plan of instruction. These, he listed as:

1. What educational purposes should the school seek to attain?
2. What educational experiences could be provided, that are likely to attain these purposes?
3. How could these educational experiences be effectively organized?
4. How could we determine whether these purposes were being attained?

The following authors are also proponents of the 'objectives' model:

a. Taba (1962) as cited by Smith and Lovat (2003:116).
b. Wheeler (1967) as cited by Smith and Lovat (2003:116).
c. Nicholls and Nicholls, (1972:21).
d. Bradley (2004:17).

5.5.2 The Descriptive Approaches

Davis, Alexander, and Yelon (1974:9-18) suggests the following instructional design as constituting a descriptive model:

a. Describing the current status of the learning system.
b. Deriving and writing learning objectives.
c. Planning and implementing evaluation.
d. Performing a task description and task analysis.
e. Applying principles of human learning.

Gagné and Briggs (1979:23) provide their descriptive approach as follows:

System Level:

Stage 1: Analysis of needs, goals and priorities.
Stage 2: Analysis of resources, constraints, and alternate delivery systems.
Stage 3: Determination of scope and sequence of curriculum and courses; delivery system design.

Course Level:

Stage 4: Determining course structure and sequence.
Stage 5: Analysis of course objectives.

Lesson Level:

Stage 6: Definition of performance objectives.
Stage 7: Preparing lesson plans (or modules).
Stage 8: Developing, selecting materials, media.
Stage 9: Assessing student performance (performance measures).

System Level

Stage 10: Instructor preparation.
Stage 11: Formative evaluation.
Stage 12: Field testing, revision.
Stage 13: Summative evaluation.
Stage 14: Installation and diffusion.

The following authors are also proponents of the 'descriptive' approach: Andrews and Goodson (1980) cited by Moore (1990:320-321), Boyle (1981:185), Davies (1981:10), Wulf and Schave (1984:2-4), Earl (1987:14), Hunkins in Hass (ed) (1987:322-326), Diamond (1989:7), Lewis *et al.* (1991:35), Banathy (1991:177-193), Briggs *et al.* (1991:10), Hass and Parkay (1993), Willis (1992) cited by Moore and Thompson (1997:36), Dick and Carey (1996:2-7), Toohey (1999:21) and Breier (2001:116-117).

5.6 LEARNING THEORIES IN RELATION TO INSTRUCTIONAL DESIGN (ID)

Learning theories influence the way instructors and other educational practitioners thought about their students and the learning material. They therefore influenced the way in which a learning event would be planned. Since a learning programme consist of an integration of learning events, which is designed by the instructional designer, it is imperative that the instructional designer should apply a learning theory or theories in the way he/she went about designing the instruction. Should the instructional designer during analysis of the training/learning situation decide to follow a behaviouristic approach, his/her design would for example, make allowance for a large number of drill and practice events. Should he/she follow a constructivist approach, he/she would develop more experimental learning events. Should he/she follow a cognitive approach, he/she would develop learning events that involved continuity and repetition. These learning theories are discussed in detail later in this section.

There is a connection between instructional design and development strategies and various learning theories and that both were somewhat confusing. Instructional design is normally associated with one or more learning theories or approaches. It is sometimes difficult to differentiate between the three theories or fundamental approaches namely, behaviourism, cognitivism, and constructivism. The sections below discuss these theories and their influences on ID.

5.6.1 **Behaviourism** is based on observable changes in behaviour and the influence of the external environment so as to predict and control such behaviour. As a learning theory, behaviourism could be traced back to Aristotle, whose essay "Memory" focused on associations being made between events such as lightning and thunder. Other philosophers that followed Aristotle's thoughts include Hobbes (1650), Hume (1740), Brown (1820), Bain (1855) and Ebbinghause (1885) (Black, 1995). According to this theory, learning is viewed as the acquisition of responses and is achieved through frequent responding and immediate reinforcement of appropriate behaviours (Mayer, 1992 cited by Kang, 2004: 40). In other

words, learning is believed to occur when a desired behaviour is consistently reinforced. Thus, the primary focus of this theory is on the study of observable behaviour: stimuli and responses.

It is sometimes referred to as 'change of behaviour' because behaviourism focused on a new behavioural pattern being repeated until it becomes automatic. According to Good and Brophy (1990:187), the theory of behaviourism concentrate on the study of overt behaviours that could be observed and measured. Instruction is the arrangement of contingencies under which learning takes place. Contingencies are environmental conditions that shape the individual's behaviour, including antecedents and consequences. All components of contingency must be measurable and observable (Kang, 2004:40). Learning is determined by objective measures in which behaviour is operationally defined and measured according to some behavioural indicators (Shambaugh & Magliaro, 1997:27 in Kang, 2004:40).

Saettler (1990:286), stated that behaviourism did not have an impact on educational technology until the 1960s, which is the time that behaviourism actually began to decrease in popularity in American psychology. He identified six areas that demonstrated the impact of behaviourism on educational technology in America: the behavioural objectives movement; the teaching machine movement; the programmed instruction movement; individualised instructional approaches; computer-assisted learning, and the systems approach to instruction.

Behaviourists assess students to determine their predisposition to learning (Ertmer & Newby, 1993:[s.p.]). With this in mind, the practice of instructional design could be viewed from a behaviourist or cognitive approach as opposed to a constructivist approach. As a result, instructors and designers using this perspective usually state the objectives of the instruction as student behaviours, use cues to guide students to the desired behaviour, and use contingencies to reinforce the behaviour (Newby *et al*., 1996 in Kang, 2004:42). When designing from a behaviourist/cognitive stance, the designer analyses the situation and sets goals. Individual tasks are broken down and learning objectives are developed. According to Kang (2004:42), "two distinctive aspects of what had become instructional design and development, 'behavioural objectives' and 'formative evaluation' first became visible in the 1930s (Kang, 2004: 39)". Objectives are specified in behavioural terms and serve as the basis for evaluating the effectiveness of the instruction.

According to Kang (2004:42), many early advocates of instructional systems design and development, such as Finn, Banathy, Briggs, and Gagné, played important roles in systems

development. Banathy (1968) defined the systems approach as "a self-correcting, logical process for the planning, development, and implementation of instruction" (in Kang, 2004:40). Finn (1962) as quoted by Kang (2004:43), argues for the desirability of using scientific procedures to determine educational goals, specifically the use of theories of analysis in the statement of objectives and systematic development of instruction. According to Kang (2004:43), Gagné (1965) made efforts to connect learning objectives to instructional design. This is self-evident in the normative and descriptive instructional design approaches as discussed above.

Many instructional design models (such as the Gagné-Briggs model) that have been developed since the early twentieth century and dominated the study of human learning for the first half of the century had been based on behaviourism and cognitive theories. They vary widely in terms of philosophical orientation, theoretical perspectives, and operational procedures. Some were prescriptive, providing systematic approaches to design courses (Kang, 2004:40). Others were descriptive, providing only a conceptual diagram (Gustafson & Branch, 1997 cited by Kang, 2004:40). They provided instructors and instructional designers with procedural frameworks for systematic production of instruction for traditional classroom-based learning, but have also been used extensively in distance learning settings.

Evaluation consisted of determining whether the criteria for the objectives had been met. In this approach the designer decided what is important for the student to know and attempted to transfer that knowledge to the student. The learning package is somewhat of a closed system, since although it may allow for some branching and remediation, the student is still confined to the designer's world (Mergel, 1998:[s.p.]).

The weakness of the behaviourist approach to instructional design is that the student's focus may find himself or herself in a situation where the stimulus for the correct response did not occur; therefore the student could not respond (Schuman, 1996:[s.p.]). Its strength is that the student is focused on a clear goal and could respond automatically to the cues of that goal (*ibid*).

5.6.2 **Cognitivism** recognised that much learning involved associations established through continuity and repetition (Good & Brophy, 1990:187). This perspective, as the name suggests, focuses on the cognitive process as the source of learning (Kang, 2004:41). As with behaviourism, cognitive psychology could be traced back to the ancient Greeks, Plato and Aristotle. The cognitive revolution became evident in American psychology during the 1950s

(Saettler, 1990:320). One of the major players in the development of cognitivism is Jean Piaget, who developed the major aspects of this theory as early as the 1920s. Piaget's ideas did not impact North America until the 1960s after Miller and Bruner founded the Harvard Centre for Cognitive studies (*ibid*).

The cognitive approach portrays humans as processors of information, emphasizing the role of the student's activities and mental structures in comprehension and the creation of meaning (Kang, 2004). It held that cognitive learning meant knowledge learning, which included not only knowledge itself but also its application. Knowledge included declarative knowledge (knowing what), procedural knowledge (knowing how), and conceptual knowledge (the acquisition of the knowledge of "when and how") (Christensen & Tennyson, 1988 cited by Kang, 2004:41). New knowledge is obtained and existing knowledge is organised and changed. As such, the investigative process and the principles of problem-solving and decision-making were part of this school (Kang, 2004:41).

Cognitive theorists also acknowledged the importance of reinforcement, although they stressed its role as a motivator. Learning thereby is defined as a change in knowledge stored in memory and is governed by internal memory processes (Newby *et al*., 1996, in Kang, 2004:41). As such, the primary responsibility of the instructional designers or experts is to select appropriate conditions for learning to occur (Gagné, 1977, in Kang, 2004:41). However, even while accepting such behaviouristic concepts, cognitive theorists viewed learning as involving the acquisition or reorganisation of the cognitive structures through which humans processed and stored information (Good & Brophy, 1990:187).

Although cognitive psychology emerged in the 1950s and began to take over as the dominant theory of learning, it isn't until the late 1970s that cognitive science began to influence instructional design. Cognitive science began a shift from behaviouristic practices that emphasised external behaviour, to a concern with the internal mental processes of the mind and how they could be utilised in promoting effective learning. The design models that had been developed in the behaviourist tradition were not simply tossed away, but instead the "task analysis" and "student analysis" parts of the models were developed. The new models addressed component processes of learning such as knowledge coding and representation, information storage and retrieval as well as incorporation and integration of new knowledge with previous information (Saettler, 1990:344).

Because both behaviourism and cognitivism were governed by an objective view of the nature of knowledge and what it meant to know something, the transition from behavioural instructional design principles to those of a cognitive style is not entirely difficult. The goal of instruction remained the communication or transfer of knowledge to students in the most efficient and effective manner possible (Bednar *et al.*, cited in Anglin, 1995). The weakness associated with cognitivism to instructional design is that the student learned a way to accomplish a task, but it may not be the best way, or suited to the student or situation (Schuman, 1996:[s.p.]). Its strength is associated with the fact that the goal is to train students to do a task the same way to enable consistency (*ibid*).

5.6.3 Constructivism is based on the belief that "students constructed their own reality or at least interpreted it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that were used to interpret objects and events" (Jonassen, 1991:5). The uniqueness of each person is emphasized and valued. Therefore, students were encouraged to bring their special talents and skills to a situation so that they could discover what is meaningful or useful to them. Instructors, then, were not seen as dispensers of knowledge but instructors in the teaching-learning process. They organised students to solve problems and construct personal realities through exploration and discussions. Education is perceived as a process of knowledge construction rather than the transfer of a body of knowledge (Kang, 2004:41). "What someone knew is grounded in perception of the physical and social experiences which were comprehended by the mind" (Jonassen, 1991:6).

According to Good and Brophy (1990:187), Bartlett (1932) pioneered what became the constructivist approach. Some of the proponents of constructivism included such philosophers as Bruner, Ulrick, Neiser, Goodman, Kant, Kuhn, Dewey and Habermas. The most profound influence is Jean Piaget's work that is interpreted and extended by von Glasserfield (Smorganbord, 1997).

The shift of instructional design from behaviourism to cognitivism is not as dramatic as the move into constructivism appears to be, since behaviourism and cognitivism are both objective in nature. Both supported the practice of analysing a task and breaking it down into manageable chunks, establishing objectives, and measuring performance based on those objectives. Constructivism, on the other hand, promoted a more open-ended learning experience where the methods and results of learning were not easily measured and may not be the same for each student. And while behaviourism and constructivism are very different

theoretical perspectives, cognitivism shares some similarities with constructivism. Constructivism holds that knowledge is not passively received but actively built up by the cognizing subject (Jonassen, 1996 cited by Kang, 2004:41).

Constructivism became a dominant force in education in the 1990s. Its perspective represents a collection of principles from a number of disciplines, such as cognitive psychology (e.g. the mind actively constructs its interpretation of information), developmental psychology (e.g. individuals' construction of information were different due to cognitive developmental differences), and anthropology (e.g. learning is a natural socio-cultural process) (Newby *et al*., 1996 cited by Kang, 2004:41). According to Simons (1993, in Kang, 2004), constructive learning is active (i.e. students process information meaningfully), cumulative (i.e. learning is developed or built on prior knowledge or past experience), integrative (i.e. students elaborate and interrelate new knowledge with their current knowledge), reflective (i.e. students consciously reflect on what is learned), and goal-directed (i.e. students subscribe to goals of learning) (Kang, 2004:41).

It is evident that the theoretical perspective of constructivism focuses on the realms of students' evolving knowledge and of the critical role that social negotiation plays in helping students interpret their experience (Jonassen, 1996; Newby *et al*., 1996 cited by Kang, 2004:41). It called for the creation of innovative practices to promote personalized education. This perspective is partially reflected in activities such as group investigation, role-playing, and various forms of cooperative learning through authentic tasks (Kang, 2004:41).

To design from a constructivist approach required that the designer produced a product that is much more facilitative in nature than prescriptive. The content is not pre-specified, direction is determined by the student and assessment is much more subjective because it did not depend on specific quantitative criteria, but rather the process and self-evaluation of the student. The standard pencil-and-paper tests of mastery learning were not used in constructive design; instead, evaluation is based on notes, early drafts, final products and journals (Assessment [On-line]).

The weakness of constructivism is that in a situation where conformity is essentially divergent thinking and action may cause problems (Schuman, 1996:[s.p.]). Where prescription is the order of the day and open dialogue is not allowed, constructivism may "…suffer some negative consequences". The strength is that, because the student is able to interpret multiple realities, he or she is in a better position to be able to deal with real life situations. Interaction,

freedom of expression, and exploration of ideas through discussion is much celebrated in constructivism.

5.7 MICHAEL MOORE'S THEORY OF TRANSACTIONAL DISTANCE

According to Verduin and Clark (1991:121), Michael Moore's theory of Transactional Distance is widely considered to be one of the better developed paradigms related to the field of distance education. It is accepted as a global theory for the further development of distance education (Gokool-Ramdoo, 2008:1). The transactional distance theory (TDT) discusses the role that pedagogy plays in distance between learners, their teachers, and the institution they have enrolled. In addition, the theory looks critically at issues pertaining the profile of the students (i.e. their dependence and independence), of their teachers (i.e. their roles and skills), of their institution (in terms of designing the curriculum and administration). This theory critically examines the role played by communication (or interaction) and student support. It evolved from basic insights regarding independent learning and student autonomy (Moore, 1972) into a multidimensional set of interrelated definitions, propositions and constructs known as the "Theory of Transactional Distance" (Moore, 1993 cited by Gorsky & Caspi, 2005). Transactional Distance Theory is a set of interrelated distance learning systems that is sustainable by student support. Student support should always be a component of distance learning in order for its survival and effectiveness.

The term *transaction* denotes the special nature of the relationship between the student and the instructor during the distance learning event: mutually acting on each other, affecting each other to evoke an experience, a meaning, for the individual student during this event (Stirling, 1997). The student, who interpreted the event, acted on the dialogue and structure *(ibid)*. The dialogue produced a response *(ibid)*. The dynamic interplay between student and instructor and student and content were continuous during which meaning evolves *(ibid)*. The created response is the realised experience of the student *(ibid)*. Each transaction by a student would be unique as the student's frame of mind, situation, and experiences evolved *(ibid)*.

According to Mueller (1997), the term *transactional distance* replaced the older term *distance education*. Distance education meant a pedagogical concept – and not only geographic separation of students and instructors *(ibid)*. According to the CMC Resource Site (2004), prior to the development of this concept, definitions of distance revolved around the physical separation of the instructor and the student. The CMC Resource Site continued to say that Moore however postulated that the concept of Transactional Distance Theory is concerned more with pedagogy than with geography *(ibid)*. Moore did not propose the term

transactional distance until 1980. His transactional concept drew upon the work of John Dewey (Moore, 1991). Dewey, in his book entitled *Experience and Education* (1938:43), stated that situation and interaction were inseparable. "An experience is always what it is because of a transaction taking place between an individual and…his environment…The environment…is whatever conditions interact with personal needs…to create the experience…" (*ibid*).

According to Moore (1993, cited in Keegan, 1993:23), three major variables affect the transactional distance. These are (a) the instructional dialogue, (b) programme structure, and (c) autonomy of the student. These variables would normally work in combination with each other and thus together affecting transactional distance (or distance education) (Figure 5.2). A discussion of each variable follows.

5.7.1 Transactional Distance in a distance learning environment

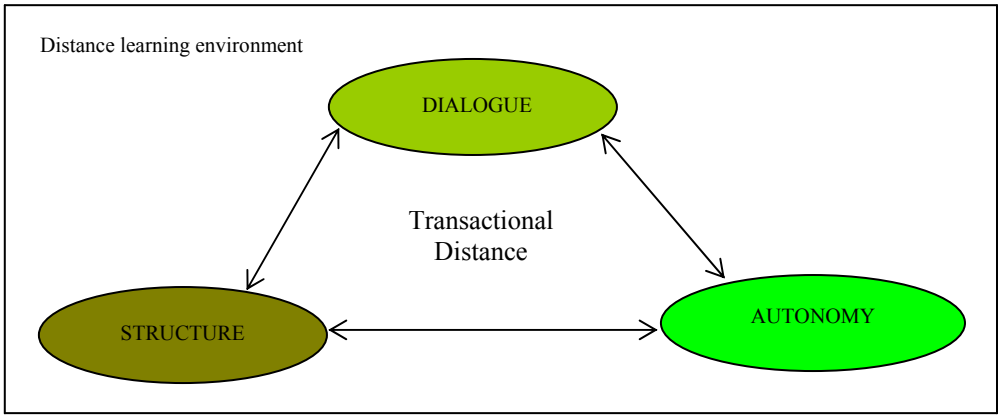

Figure 5.2: Diagrammatic representation of Transactional Distance

5.7.2 Variables informing Transactional Distance

According to Moore (1993) cited by Mueller (1997), separation between the instructor and the student in distance education is more than just the distance separating them. To him, there is "… a psychological and communications space to be crossed, a space of potential misunderstanding between the inputs of the instructor and those of the student" (Moore & Kearsley, 1996). This is the space that Moore calls transactional distance. This distance affected both the teaching and learning and so efforts should be directed at closing this distance so that effective teaching and learning could take place.

5.7.2.1 Instructional dialogue is an interaction between the instructor and student, specifically the communicative transaction of giving instruction and responding. Dialogue is characterized by different forms of communication; two-way, real-time and dialogue internalized within the learner. Thus, it has a purpose, is necessary, helpful and valued by

each party. Both partners are respectful and active listeners and contributors in the learning event at the same time. However, it is directed towards an improved understanding by the student and him or her achieving his or her educational goals.

The extent and nature of the dialogue is determined by the educational philosophy and policy behind the distance learning programme. The design and development of the course is also part of this. In addition, the subject matter, the content area, and the academic level of the course play an important part in dialogue. The selection and training of instructors, their personalities and learning styles of the students also determine dialogue. As dialogue is characterized by communication, it is determined by the medium of communication. The number of students each distant instructor is responsible for and the emotional, the needs and motivational environment of instructors and students also determine dialogue. In addition, the regard or disregard of given educational activities determine dialogue. The essential concern here is whether or not opportunities for such dialogue are built into a learning programme and whether or not they are mediated in the best possible way in the circumstances.

5.7.2.2 Programme structure refers to how the instructional programme is designed, the organisation of the instruction and the use of various communication media. In this sense and for this reason Moore (1991), cited by Stirling (1997), said that structure reflected the programme's capacity to respond to a student's individual needs. Building on this foundation, Mueller (1997) said that structure expressed the rigidity or flexibility of the programme's educational objectives, teaching strategies, evaluation methods and the ability to accommodate each student's individual needs.

According to Moore (1993, cited in Keegan, 1993:28-30), a number of processes had to be structured into every programme. These were presentation of content; support of the students' motivation; helping students develop skills of analysis and criticism; advice and counsel for the students; arranging for students to practice, apply, test and evaluate what is learnt; and arranging for students to create knowledge.

How each of these is structured into the programme would determine whether that programme would overall be highly structured or less structured and ultimately this determined the transactional distance that would exist between the student and the instructor. A highly-structured medium would mean no or little dialogue and inputs from the student. An example is a recorded television programme. A less structured medium allows more dialogue and a wide range of alternative responses to students' queries. An example is a teleconference

session. Thus, the structure would determine the level of rigidity or flexibility in the programme.

To put it in a nutshell, programme structure refers to the extent to which a programme could accommodate or be responsive to each individual's needs, and suggests the need for multi-disciplinary teams to design learning experiences in such a way that diverse needs are catered for and opportunities for student-student and student-instructor dialogue were maximised.

5.7.2.3 Student autonomy referrers to the characteristics of self-direction. The CMC Resource Site (2004) said that, "student autonomy depended upon the individual student's sense of personal responsibility." In a broad sense, student autonomy means the extent to which in the distance teaching and learning relationship, it is the student rather than the instructor who determines the goals, the learning experiences, and the evaluation decisions of the learning programme. It raised questions about the extent to which a programme can or must be delivered in such a way that it helps students to reach a point where they no longer need another person to mediate their learning. At this stage students could cope with a high degree of geographical and time distances between themselves and their peers and instructors. Saba (1988) cited by Stirling (1997) added the variables of student and instructor control. How autonomous the student is would also depend on how much control he or she has for decision-making. This would also include the instructor-control of the student. For example, the CMC Resource Site article on Transactional Distance Theory (2004) said that, "high levels of student autonomy would necessitate lower levels of instructor control." According to Knowles (1970), "not all students were self-directing." However, from a psychological perspective, as a person matures, his or her self-concept moves from dependency towards self-direction (Gravett, 2001). Self-directed learning could be a new experience for some students. It is for this reason that Knowles (1970) suggests that students have to be prepared and motivated for self-direction. Boyd (1966) cited by Mueller (1997) spoke of a fully autonomous student. He says he is emotionally independent of an instructor, can approach subject matter directly and has a self-concept of being self-directed. Hence, instructors have to assist students to acquire the skills of fully autonomous learning.

5.7.2.4 Other factors influencing the three major variables

The extent of transactional distance in an educational programme is a function of the above-mentioned three sets of variables, each characterised by major qualities of teaching and learning environmental factors. But there were an additional number of other factors, qualities and characteristics influencing each variable. These are depicted in Table 5.1 below.

It should be noted that there is an overlap of these factors from one variable to the other. This, in turn, signifies a strong relationship that exists between and among the three major variables.

5.7.2.5 Factors influencing Transactional Distance

S/N	DIALOGUE	STRUCTURE	AUTONOMY
A	**The concept of Transactional Distance (distance or separation is crucial)**		
	Transactional distance gives instructional designers a theoretical framework to build an effective learning environment. Instructors and designers enlightened with the underlying dynamics of transactional distance create an educational system by balancing the interplay of structure and dialogue to fit the program's intended purpose. Moore's theory provides a way to describe varying levels of instructor-student interaction. This interactive awareness helps an instructor to build a more effective learning environment. Additionally, this theory aids and assists in the development of innovative instructional models.		
B	**Characteristics of the three major Variables**		
	Refers to two-way communication between Instructor and student. (It demands partnership, respect, warmth, consideration, understanding, honesty and sincerity),	Is the degree to which, objectives, teaching & study methods, and evaluation are adapted to the needs of individual students. (It expresses the rigidity or flexibility of the programme).	Means the extent to which in the teaching and learning relationships it is the student rather than the instructor who determines the goals, the learning experiences, and the evaluation decisions of the learning programme. (It refers to the characteristics of self-directedness).
C	**Factors that influences the three major Variables**		
	-The number of students each instructor must provide instruction to. -The physical environment in which the students learn or the instructors teach. -The emotional environment of instructors (i.e. their rewards or achievements). -The instructor personality (i.e. might not take advantage of the interactivity of a programme). -The student personality (i.e. might not take advantage of the interactivity of a programme). -The content (i.e. the experience and academic levels of both, the student or the instructor).	-Is determined by the nature of the communications media being employed. -Is determined by the philosophy and emotional characteristics of instructors. -Is determined by the personalities and other characteristics of students. -Is determined by the constraints imposed by educational institutions. -Is the formality or informality of the subject matter (i.e. necessity for high or low levels of structure for some students). -The main characteristics is the structuring of the learning and teaching process (It is the extent of its application – with reference to education technology).	-Independent learning. -The ability of students to share responsibility for their own learning processes. -Personality characteristics of preferred way of learning and being taught. -How students use teaching material and teaching programmes to achieve goals of their own, in their own ways, under their own control. -DE programmes should be examined to see to what extent the instructor or the student controls the main teaching and learning processes, and could be classified according to the degree of student autonomy permitted by each programme. -Not all students are at the state of readiness for fully self-directed learning.
D	**Shortcomings of the three major Variables**		
	-TD is greater when there is little dialogue and smaller when there is more dialogue.	-Highly-structured medium means little or no dialogue and inputs from students. -Less-structured medium allows more dialogue and a wide range of alternative responses from students.	-High levels of student autonomy would necessitate lower levels of instructor control. -For instance, the greater the TD, the more such autonomy the student will exercise.

Table 5.1: Factors that influenced transactional distance between the three major variables. (Adapted from Moore, 1993 as cited in Keegan, 1993: 25-32 and arranged in a tabular form for purposes of the study)

5.8 DIALECTIC METHOD IN SOCIAL THEORY

According to Rowland (2003), learning may indeed be such a complex and misunderstood phenomenon that it cannot be completely explained by any single theory, but the attempt to unify, or rather to integrate, is a worthwhile, perhaps critical, component of making it understood. Dialogue has generally been assigned a fundamental place in Western views of education. But it cannot be said that dialogue is confined to teaching and learning only; it has been and always will be an important phenomenon social theory, politics, and other sciences. Gorsky, Caspi and Tuvi-Arad (2004:2), add that dialogue has been viewed from both philosophical and pedagogical approaches. Dewey (1916), Buber (1965), Bruner (1966), Rogers (1969) Freire (1972), cited by Gorsky, *et al* (2004:2) contend that philosophical approaches to interpersonal instructional dialogue tend to emphasize either its epistemological advantages in the pursuit of knowledge and understanding (Socrates and Plato) or its moral and political foundations based on egalitarianism and mutual respect. Dialogue as been discussed in the study so far could also be reinforced by an analysis of 'dialectical' method.

Social theory is an essential tool used by scholars in the analysis of society; through the use of theoretical frameworks, social structures and phenomena is analyzed and placed in context within a particular school of thought. Social theory as a discipline emerged with the period now considered to be modernity and is largely equated with an attitude of critical thinking, based on rationality, logic, objectivity and the desire for knowledge through a posteriori methods rather than through a priori methods.

According to Flew (1981:94) the term 'dialectic' is derived from Greek meaning 'to converse' or 'to discourse'. The Longman Dictionary of Contemporary English (2001) defines the term dialectic as "a method of examining and discussing ideas in order to find the truth". Dialectics is the realization of truth (Van Gerwen, 2001:71). Furthermore it also addresses the notion that we have to engage in dialogue to discuss the premises that are probable. On the other hand 'dialogue' and 'dialectic' are also closely linked and associated with the notion of 'discourse' or stories. As a set of stories, discourse reminds us of a partial exposition of the reality we are dealing with (Smith & Lovat, 2003:20). Smith and Lovat (2003:108) explain the phenomenon further by using Foucault's deconstruction of scientific realities to 'discourses of power'. One can therefore coincide with the argument of Habermas that the 'ideal speech situation' or 'ideal dialogue opportunities' serve as "a critical standard that enables us to identify and eventually dismantle the barriers which prohibit symmetrical communicative exchange" (Kearney, 1986:227; McCarthy, 1994:306-307). Unfortunately our 'communicative competence' is "deformed by the hidden interests of domination and

power" (Kearney, 1986:228). The communicative competence involves situations in which one enjoys freedom from the constraints of domination (Habermas, 1989:358).

In the context of the study dialogue reminds us of our communicative competence or ability to engage collaboratively in exposing the conflict that creates barriers between different levels of power. Dialogue as symmetrical practice has to engage in a two-way communication between policy makers and instructional designers, between unit commanders and programme managers, between course lecturers and students. The emerging discourse can then serve as narrative or as 'dialogic space' as Rule and Harley explain it in Welch and Read (2005:181). The authors continue to explain that according to Freire, "dialogue is not merely an educational technique; it is something fundamental to the process of becoming a human being". The essence of dialogue in a distance education environment are finally captured by Rule and Harley, in Welch and Read (2005:181) as follows:

> "Dialogue occurs as learners engage with course materials, facilitators and fellow learners, and relate the course content to their organisational contexts".

One can therefore now argue that the 'dialogic space' as it applies to this study, and as referred to by the authors in the previous paragraph, is rooted in the quality criterion that learners (should be) provided with a range of opportunities for real two-way communication … The need of learners for physical facilities and … participation in decision-making should also be taken into account' (Welch & Reed, 2005:32).

Dialogue is therefore a tool or mode of operation for students to critique and question, to agree and disagree, or to support or reject postulations, premises and hypotheses brought before them. This ensures their need in pursuit for the truth and to gain autonomy. In the classical Socratic dialogues, Socrates takes on the role of the critical friend, questioning his students to enable them to arrive at an understanding of their reasoning and argument (Frick, Albertyn, & Rutgers, 2010:75). Unfortunately however, one-directional dialogue is not true to the symmetrical qualities of the 'ideal dialogue' situation. One-directional dialogue is an authoritarian display of power, and exploitation of the student-teacher relationship. It contributes little to establishing an emancipating discourse on teaching and learning, and fails in maintaining an ideal learner support initiative.

In classical philosophy, dialectic is controversy, which is the exchange of arguments and counter-arguments respectively advocating *propositions* (theses) and *counter-propositions* (antitheses). The outcome of the exercise might not simply be the refutation of one of the

relevant points of view, but a synthesis or combination of the opposing assertions, or at least a qualitative transformation in the direction of the dialogue. The aim of the dialectical method, often known as *dialectic* or *dialectics*, is to try to resolve disagreement through rational discussion, and is ultimately the search for truth.

Socrates was in the habit of examining others' beliefs, at times even first principles or premises by which we all reason and argue. Socrates typically argued by cross-examining his interlocutor's claims and premises in order to draw out a contradiction or inconsistency among them. According to Plato, the rational detection of error amounts to finding the proof of the antithesis. The principal aim of Socratic activity seemed to be to improve the reasoning of his students, by freeing them from freedom from dialogue and interaction.

5.9 DISCIPLINE OR DIALOGUE

From the teaching and learning point of view discipline refers to the formal structure that one often encounters in the teaching of a subject. An example is the use of classical behavioural objectives that outlines precisely for the student what has to be done and it is one way of structuring the learning materials. It is related to the way Moore defines his transactional theory. Moore (1993, cited in Keegan, 1993:26) defined a concept of learning and teaching that, from its approach and in important characteristics, differs from the concept of dialogical learning and in some parts was even in contrast to it.

It is not open to spontaneous interventions and unforeseen developments but is closed because it is consistently planned on a targeted basis and with small steps, its time is regimented and it is uniformly controlled and evaluated (Peters, 1998:41). According to Peters (1998), the main instrument of this learning and teaching is contained in printed courses or multimedia learning packages which consist of carefully developed and optimised courses and sets learning into motion and controls it, vicariously, for students and instructors. This is the structure we normally build into our education systems. We structure the way the material has to be arranged (sequencing and ordering), we structure the objectives required for teaching and we also structure the way the students have to master the subjects' content.

Moore used the example of a teaching film for television to show just how far this structuring could go. In the film, literally every word, every action of the instructor, every minute of the available time and even the tiniest detail of the contents were laid beforehand. As a result, there is practically no opportunity for students to deviate from the learning path or to vary it to take account of individual learning requirements or spontaneous contributions (Peters, 1998:41).

The militaries are familiar with this way of doing things. By virtue of the military being autocratic, it prescribes the way teaching has to take place and at times it is formal in the way it wants to teach. It sets specific standards, targets, pass rates, entry requirements and types of examination. Therefore, teaching is structured in a 'do it my way' kind of thing. They are prescriptive in how the learning has to take place and how the outcomes have to be achieved. This refers to structure or discipline.

The SANDF, in particular, is also familiar with this way of structuring their ETD. Teaching and learning in the SANDF is structured in a disciplined way. The SANDF's ETD Process as discussed, is the way teaching and learning is structured, designed and formalised. The SANDF ETD Process uses and is based on the classical behavioural objective. It was stated earlier that the DOD regarded ETD as a systematic and planned process to change the knowledge, skills and behaviour of its people in such a way that organizational objectives were achieved (DOD ETD Project Team Report, 1997a:5). As such, the DOD/SANDF ETD Process is prescriptive, descriptive and provides a systematic approach to designing courses and learning programmes.

The ETD Process provides instructors and instructional designers with procedural framework for systematic production of instruction for traditional classroom-based learning and distance learning-based settings. Teaching and learning in the SANDF is confined to the ETD Process. Learning objectives are tied to instructional design and the ETD Process also subscribes to outcomes-based education (OBE). Evaluation consists of determining whether the criteria for the objectives had been met. This is depicted by the use of a "mark sheet" in examinations. The SANDF students and the researcher have experienced it and are used to this kind of approach.

Defining the failure of the U.S. military leadership to investigate, educate and discipline top enlisted Army men who were on trial accused by six women for sexual misconduct and 140 naval and marine officers accused of assaulting and sexually harassing 83 women, Lt Col Karen Johnson (1998:[s.p.]) stated that this is because, the military is an autocratic, closed environment that is very capable of enforcing rules and demanding discipline. This observation could be made in every spectrum and life of the military.

Wilmore (1990:[s.p.]) says that the United States Military Academy at West Point produces high standards of quality officers but observed that, there is no such thing as participatory or site based management. Administration is totally autocratic *(ibid)*. "if a professor or cadet

does not like it, too bad" *(Ibid)*. Complaining or whining is definitely not allowed. Academically, each professor at West Point used the exact same syllabi for each section of each course. There is no such thing as academic freedom *(ibid)*.

Opposed to the above is dialogue or dialectic argument that calls for a move away from the prescriptiveness of doing something. Doing and thinking becomes more open. There is a need for distance learning practitioners to debate the value of the content. This is to make certain that content is not fixed and the admission of students into the programme is also not fixed. In addition, dialogue should be able to assist distance teaching practitioners not to set assessments in a prescriptive way any more. The distance learning practitioners should move away from the disciplinary way of thinking. They should not think in terms of fixed boundaries or discipline any longer. They should use dialogue to open up options and opportunities for their learners.

According to Peters (1998:33), the concept of dialogue does not mean the written presentation of contents in simulated letters or conversations, but rather means direct and indirect oral interaction between instructors and students, in other words, an *actual* dialogue. Moore (1993) cited in Keegan (1993:24) characterises the dialogue by contrasting it with other interactions in learning and teaching:

> "A dialogue is … appreciated by participants. Each party listens … with interest to the other. Each party contributes something to its progress and referrers to contributions made by the other parties. There may be negative and neutral interactions. However, the term dialogue always referrers to positive interactions. Value is placed on the joint solution of the problem under discussion".

This concept, he continued, is committed to humanistic pedagogics for which the dialogue from person to person is of central importance in so far as it is unstructured and open-ended *(ibid)*. Dialogical learning demanded from participants, partnership, respect …consideration …understanding … and sincerity (Reinhard & Tausch 1977, in Peters 1998:33). This is why Moore (1993) argues that the more discipline or structure, and the less the dialogue, the larger the gap or transactional distance between student and instructor (Keegan, 1993:24). This results in a tension in the interplay between the two factors as illustrated in Figure 5.3.

5.9.1 Tension between structure and dialogue

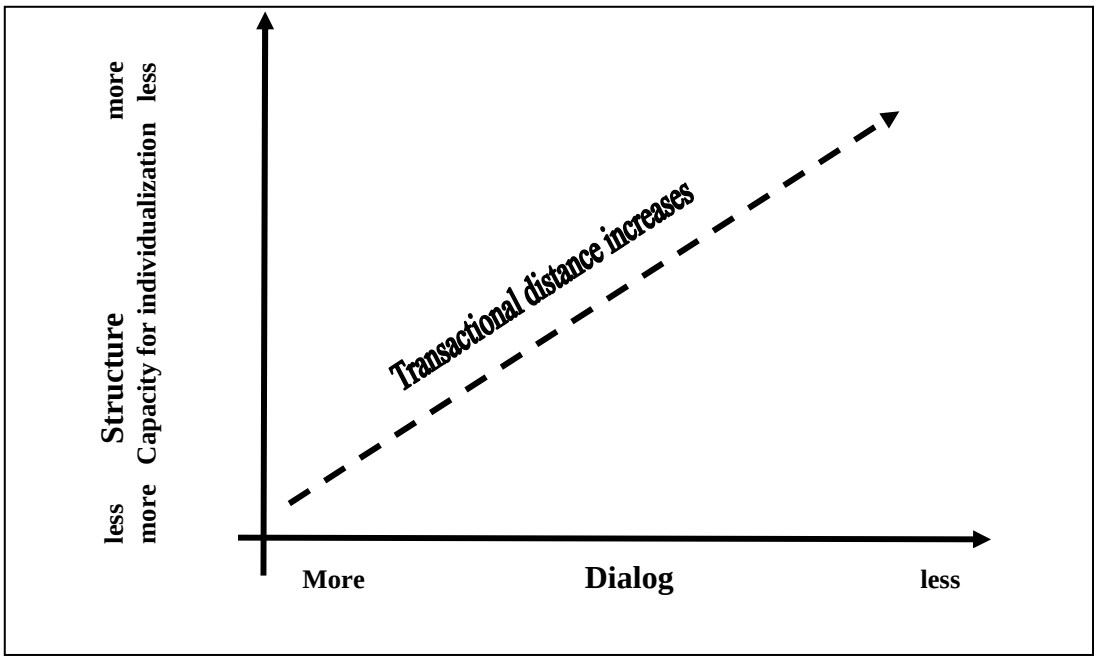

Figure 5.3: Tension of interplay between structure and dialogue (discipline) that produces transactional distance (Adapted from Holmberg, Moore & Peters, 2007:438)

According to Peters (1998:33), Moore put the dialogue in first place in his list of the constitutive concepts. The reason being that the partnership dialogue between instructors and students in the sense described presented great difficulties in teaching in practice and, in universities, the necessity in many faculties to provide for extremely large groups of students restricted the opportunity for dialogue even further (Peters, 1998:34).

In the context of this study, structure is put first because of the organisation and administration in the military environment. The organisational pattern and operating practices of a distance education establishment are based on the educational philosophy of that institution as well as some economic and political restrictions (Verduin & Clark, 1991:166). The prevailing philosophy of the military is based on its autocratic nature. Although hybrids and variations exist, Rumble (1986) cited by Verduin and Clark (1991:167) suggested that there are three potential models for organising distance education: institutional centred, student centred, and society centred.

The institution-centred model fit the military organisational structure. Hence, the administration of distance education in the military tends to be based on this model. According to Verduin and Clark (1991:167), in the institution-centred model, large numbers of adult students are handled with highly controlled and technical experiences emanating from the institution. Little student input occurred on goals, directions, and content other than the students' decision to enrol in a given course or set of courses *(ibid)*. The experts develop the

materials and learning packages and their major concern is to develop the protocols and have them delivered to students *(ibid)*. Interpersonal communication is almost nonexistent, and limited guidance is available to students *(ibid)*.

Escotet (1980) cited by Verduin and Clark (1991:167) termed this model more instruction than education because little permanent contact between student and instructor or student and student is available. Also, little socio-cultural interaction and feeling, mutual respect and dialogue, and interpersonal communication, which would make this model education, were present *(ibid)*. This model basically transferred information from the institution to the student in a rather straightforward manner. In this model, large numbers of students were served and that made it an economically advantageous way to conduct its programmes. These features caused this model to be politically expedient. Many proprietary institutions offering distance education like those in the military would fall in this category. The SANDF will have to base its decision on the evidence provided in this section.

5.10 PROGRAMME EVALUATION

The previous sections had so far discussed a number of theories around instructional design. In the current study this is treated as a theoretical framework that would serve as basis from where a conceptual framework would be constructed. Thus, in this section, the aim is to design from the theoretical framework, a conceptual framework that would be used to evaluate the distance learning programmes of the SANDF. In order to achieve this, the three sections are to be merged and fitted together to come up with components of programme evaluation; that is, components that were not suited to the combination of all theories, and hence, to distance learning programmes and those that were common to all theories, and maybe, suited to distance learning programmes of the SANDF/DOD.

First, an exposition of different instructional design models is discussed. These centred around normative and descriptive approaches which tended to apply behaviourism and cognitive learning theories. It is exposed that these approaches leaned heavily on the attainment of pedagogical objectives in education. It is also stated that the content in these approaches tended to be descriptive; and the role, aim and goal of education is to transfer knowledge to students. Instructors were the only knowledgeable transmitters of this knowledge. Instructors also received or got this knowledge from pre-written books by knowledge experts. The role of assessment in these types of approaches is also discussed. It is stated that assessment is used to determine whether the criterion of the objective has been met and these tests were normally standardised; these approaches were meant to conform to set standards. In these approaches, learning is evaluated on the basis of behavioural

objectives and the learning design is linked to learning objectives. The highly-structured content resulted in no or little dialogue. The constructive learning theory is also discussed. It came out that the constructive approach allowed students to construct their own meaning in education. They based this on their experiences and prior knowledge. It is stated that this approach did not allow prescription as it relied on cooperative and group investigation. The constructive theory is dependent on open dialogue, exploration of ideas through discussion and freedom of expression. It is also stated that the product in constructive approach is produced in a more facilitative nature than prescriptive. Self-evaluation, subjective evaluation, and evaluation of final products is allowed and encouraged. Thus, the strengths and weaknesses of these approaches came out in the discussion of these theories.

Second, Michael Moore's theory of 'transactional distance' with its three accompanying variables of instructional dialogue, programme structure and student autonomy is also discussed. The transactional distance theory exposed the importance of dialogue as being directed at improving the student in understanding and achieving his or her educational goals. The role played by structure in responding to an individual student needs and educational objectives is discussed. It is determined that a rigid structure or highly-structured medium resulted in no or little dialogue and inputs from the student. It is also pointed out that higher levels of student autonomy would necessitate lower levels of instructor control. In the discussion of the variables, 'dialogue,' specifically, came out strongly to be in support of the constructive learning theory and sometimes how it is neglected in our present teaching and learning, especially in distance learning.

Next, the role of 'dialectic' method in social theory is discussed. It is apparent that the 'dialectical' method is once the bone of contention in critical theory; among 19th, 20th centuries and contemporary philosophers. It is shown that the 'dialectic' approach is a method of examining and discussing ideas in order to reach an amicable solution. It is an exchange of arguments and counter-arguments in order to find the truth. It is stated that 'dialectic' is based on the fact that in a discussion there are two or more opposing views or sides, a continuous discussion would lead to one view being accepted by others as the truth or as valid, and the valid view or truth lead to a change of others' views thus, reaching a solution. Again, this point is supported by the constructivist theory that, in a discussion, students should be allowed to contribute their own views; that is, the exploration of ideas through discussion.

Lastly, the aspect of 'discipline' or 'dialogue' is explored. This section tried to put everything raised in these sections into perspective; trying to say or ask, in these circumstances, which is

which?" It pointed to 'discipline' as resembling the descriptive nature of some of the instructional design approaches, as found, for example, in most educational settings and militaries of the SANDF distance learning programmes. 'Dialogue,' on the other hand discussed the value of debate in content as being not prescriptive and where assessments are not fixed to certain standards. In 'dialogue,' objectives and goals were pre-selected, pre-arranged, and pre-emptive. This section, again, supported the constructive notion that promoted more open-ended learning experiences and that learning should be a process of knowledge construction.

5.10.1 Components of programme evaluation

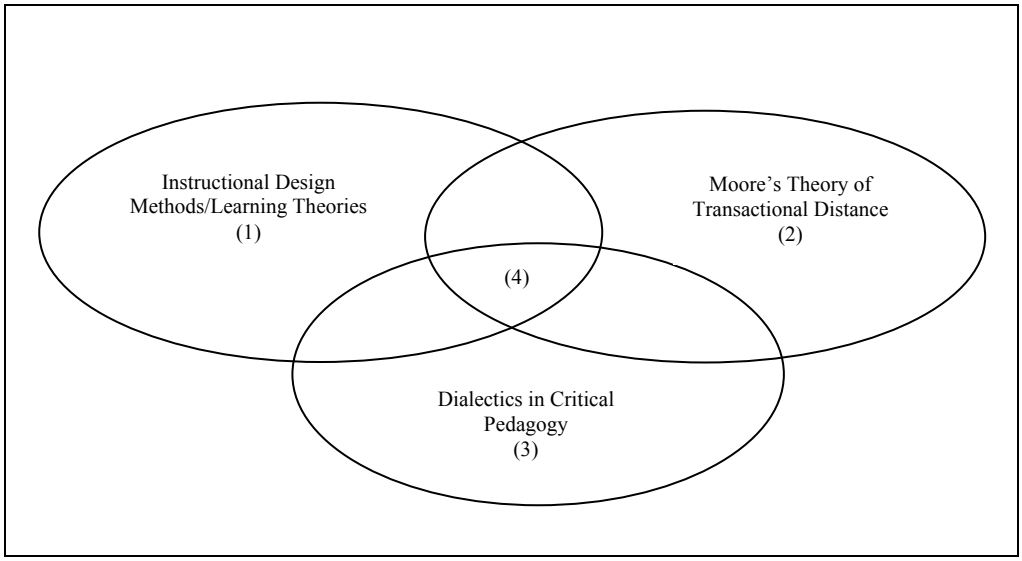

Figure 5.4: Diagrammatic presentation of Components of Programme Evaluation

As such, in the diagram, the components of programme evaluation depicted in number (1), number (2) and, number (3) were not suited to an instructional system design. Thus, it is not necessarily part of '*performance excellence'*. Amongst others, these issues included the following:

a. The descriptiveness and prescriptiveness of content.
b. The student's behaviour as objective of the instruction.
c. The learning design as linked to objectives.
d. Standard tests and conformity to standards.
e. Rigidity of the structure, evaluation methods, and objectives.
f. Highly-structured or rigidly-structured content.
g. The effectiveness of the instruction programme evaluated on the basis of behavioural objectives.
h. Evaluation as used to determine whether the criteria of the objectives had been met.
i. Little or no dialogue.
j. Transfer of knowledge to the student.

The issues in number (4) in the diagram depicted components that were common to all three theories discussed: instructional design methods (including learning theories), Moore's theory of transactional distance, and the dialectic method. Amongst others, these issues included the following:

a. Students focussed on clear goals, that is, they were goal-oriented.
b. The students determined the goals, learning experiences, and evaluation decisions of the learning programme, evaluation is based on final products, and self-evaluation is encouraged.
c. Education as a process of knowledge construction.
d. Learning focused on knowledge and application.
e. Diverse needs were catered for.
f. Students were guided to the desired behaviours.
g. Individualised instructional approach (these could take the form of facilitation, coaching, induction, counseling, etc).
h. Instructors were facilitators and a product is produced in a more facilitative nature, rather than being prescriptive.
i. Students were guided by the principles of problem-solving and decision-making.
j. Learning involved continuity and repetition.
k. Creation of appropriate conditions for learning.
l. Students constructed their learning.
m. Students interpreted information/learning based on their experiences.
n. Individual uniqueness that brought talents and skills is encouraged.
o. Dialogue: open dialogue is encouraged, supported and valued by all participants.
p. Opportunities for dialogue were built into the learning programme.
q. Student-to-student and student-to-instructor dialogue is encouraged.
r. Students were organised into groups to solve problems through exploration and discussions.
s. Structure reflected the capacity to respond to the student's needs.
t. Flexibility of structure, evaluation methods, and objectives were reflected in the learning programme.

These aspects should guide and be built into instructional design methods. In addition, the roles of independence, motivation, student support, and high levels of student control that results in lower levels of instructor control were encouraged and built into the learning programme. Finally, these components were recommended for any instructional design to

warrant ***performance*** excellence where student and instructor characteristics were taken into consideration.

5.11 CONCLUSION

This chapter discussed the theoretical framework of the study. The theoretical framework is based on Moore's theory of Transactional Distance supported by the importance of the role played by 'dialogue' and 'dialectic' method of social theory. Theories concerning these concepts were analysed and discussed. Next, contrasting, combining and linking these theories were discussed. It is stated that components that were common as well as opposed to each other in these theories could be used in programme evaluation of the SANDF/DOD distance learning programmes that are to be evaluated. It is also stated that the common components in these theories would constitute what had been termed ***performance excellence*** in the study.

CHAPTER 6

RESEARCH DESIGN, METHODOLOGY AND STRATEGIES

6.1 INTRODUCTION

A summary of this chapter: research design, methodology and strategies is furnished in chapter one. The aim of this chapter is to discuss the same in detail. This includes the reasons behind choosing such design, strategies, and methods. The sections in this chapter include the research design, research methodology, setting, sample, data-collection techniques, data analysis, data reporting, piloting, and the role of the researcher.

6.2 RESEARCH DESIGN

Applied research, which is descriptive in nature, is applicable to this study in that its purpose is to solve a specific problem rather than develop knowledge (Collins, *et al*. 2000:82). The aim of the study is to determine the requirements placed on the design of Distance Education (DE) programmes with regards to identifying the nature of discipline and dialogue and how these factors impact on student support in the SANDF. This problem is well-suited for qualitative-design approach because it is exploratory in nature and the variables and the theoretical basis of this topic is unknown (Creswell, 1994:146) According to Morse (1991:120), characteristics of a qualitative research problem are: (a) the concept is "immature" due to a conspicuous lack of theory and previous research; (b) a notion that the available theory may be inaccurate, inappropriate, incorrect, or biased; (c) a need existed to explore and describe the phenomena and to develop a theory; or (d) the nature of the phenomena may not be suited to quantitative measures.

The assumptions of qualitative designs for this study are (a) descriptive in that the researcher is interested in the process, meaning and understanding gained from the DOD distance learning practitioners; (b) fed the interest in meaning – how DOD distance learning practitioners make sense of their teaching and learning experiences; (c) concerned primarily with process, to enhance the chances of DOD distance learning practitioners to be successful in a distance learning programme; (d) inductive in that they involve the formulation of generalisations of the DOD distance learning system and building concepts and theories from details based on data collected; and (e) the researcher is the primary instrument for data collection and analysis (Merriam, 1988:19-20).

Thus, this research sought to explore and understand from the distance learning practitioners the requirements placed on the design of distance education programmes in their respective distance learning institutions with the aim of identifying the nature of discipline or dialogue

and how these factors impacted on student support and drop out in DOD and/or SANDF. According to Bless and Higson-Smith (2000:38), when the researcher prefers to ask people what they know, and how they learned what they know, he or she is applying qualitative research. These people would speak about their practical knowledge, understanding and experience of distance administering, teaching and the learning environment.

6.3 RESEARCH METHOD

6.3.1 Setting

The study is conducted at three distance education institutions in the SANDF, namely, the South African Army College (SAA), the South African Air Force College (SAAF) and, the South African School for Military Health (SAMHS). There were approximately 11 institutions in the DOD that provides instruction through the distance learning mode. In addition, the Military Academy that offered military-related tertiary qualifications, instructs in both, distance and residential settings. These institutions qualify or graduate approximately 1000 students each year. In general, permission to conduct this study was obtained from the Defence Intelligence and, specifically, permission to interview and use a tape-recorder was obtained from the distance learning authorities at the three institutions. The reason for a tape-recorder was to make accurate transcripts. A letter was sent to each Arm of Service (AoSs) ETD Director/Manager explaining the purpose of the research and requesting him/her to assist in identifying distance education instructors and students to participate in the study. The SA Navy, as an AoSs; declined to participate in the study, citing that their institutions no longer offer their learning through distance education. As such, it was not feasible to access students who had previous experience with distance learning in the SA Navy. This letter emphasised that participation would be voluntary and no inducements would be offered to participate in the study and that participants may terminate their participation in the study at any time.

6.3.2 Sample

It has been mentioned before that the South African National Defence Force is divided into four Arms of Service (AoSs): Army, Air Force, Navy and Military Health Services. The AoSs provides unique services to the National Defence Force, differing from each other. As depicted in figure 6.1, each AoSs has an institution or several institutions that provide distance learning to its corps members. They educate, train and develop their members according to their corps specifications, mustering, and functional or occupational specialisations. The DOD Distance Learning Task Force reported that these are 13 DOD learning institutions that used distance learning mode of delivery, in 2003 (Figure 6.1).

6.3.3 Distance learning institutions in the Department of Defence

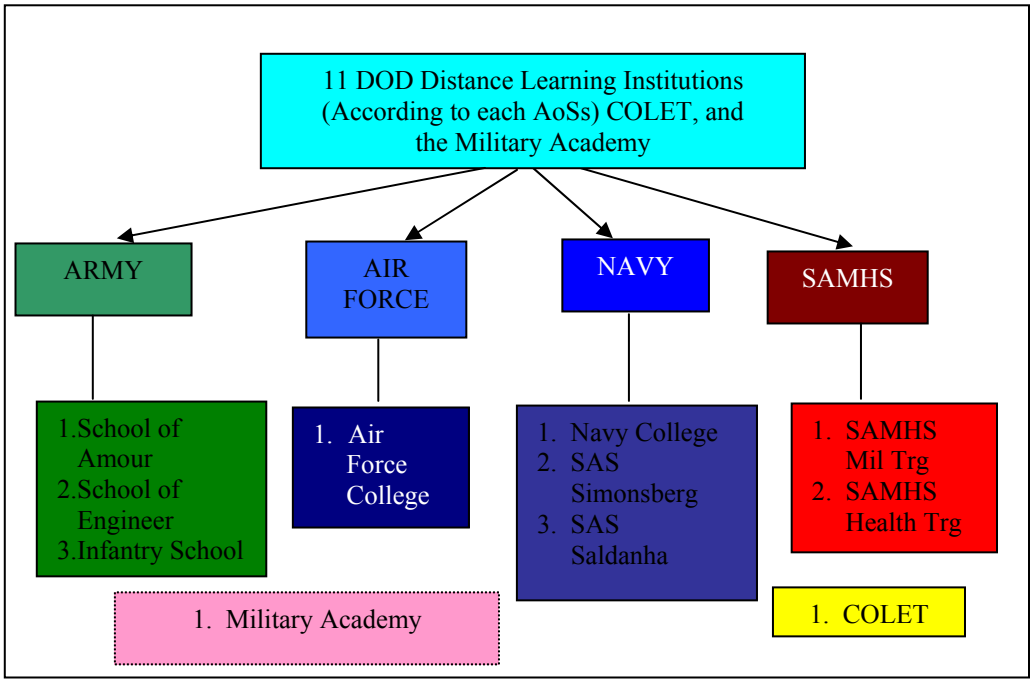

Figure 6.1: Eleven DOD Distance learning institutions, COLET, and the Military Academy

Based on the preceding data, the sampling method of this study is purposeful sampling in that it would have involved four distance learning institutions (i.e. one each from an Arm of Service), instead, only three institutions participated as mentioned earlier and are also depicted in figure 6.1. Three institutions, namely; the Army College from the South African Army (SAA), the Air Force College from the South African Air Force (SAAF), and the School for Military Training from the South African Military Health Service (SAMHS), participated in the study. The three participating institutions cited the difficulty of the availability of students if the institutions were not in school session. Instead, the researcher was allocated focused groups from the three institutions and later other individuals were sought to provide information. These focused groups and individuals comprise distance learning course managers, course coordinators and instructors or facilitators in those particular institutions. The researcher decided to replace the unavailability of student interviews with anonymous student reports normally collected by programme managers at the end of a programme

6.3.4 Data-collection techniques

First, information was obtained by means of unstructured and semi-structured interviews. This was a semi-standardised, open-ended, audio-taped and transcribed interview programme. Each of the three sets had a similar interview schedule; some of the interview questions were both similar and different. According to Struwig and Stead (2001:98), a semi-standardised interview is a combination of structured and unstructured interviews. The option for these

interviews was face-to-face, one-on-one and in-person. This allowed the researcher "control" over the line of questioning (Merriam, 1988 and Bogdan & Biklen, 1992, cited by Creswell 1994:150).

Second, personal interviews are the most versatile and flexible questionnaire method. They are a useful way of assembling large amounts of data quickly and are an especially effective way of obtaining depth in data (De Vos *et al.*, 2002:305). Struwig and Stead (2001:86-87) said that unstructured interviews are of variable length and may be employed, adapted to the situation (individual and context) and, if required, both the interviewer and interviewee could provide further explanations or clarifications. The drawbacks to interviews are that they provide "indirect" information filtered through the views of interviewees, provided information in a designated 'place', rather than the natural field setting and the researcher's presence may bias responses, (Merriam, 1988 and Bogdan & Biklen, 1992) cited by Creswell (1994:150). The other weaknesses of interviews, according to De Vos *et al.* (2002:305), are that, as interviews involved personal interaction and cooperation as essentials, participants may be unwilling to share information. Researchers may ask questions that did not evoke the desired responses from participants, the responses may be misconstrued, or even, at times, be untruthful.

Thirdly, the researcher has decided to replace the unavailability of student interviews with anonymous student reports normally collected by programme managers at the end of a programme. Permission was granted by the Department of Defence higher authority for the researcher to have access to the information. The permission letter is attached as Appendix P. The Department of Defence higher authority is the defence intelligence unit specifically designated to grant the permission. The researcher produced an official letter from the authority to the participant distance learning institutions. In turn, the participants also signed a letter giving permission to the researcher to use information contained in the student reports.

Fourthly, text or document analysis is also another procedure used for data collection. These were official documents that were compiled and maintained on a continuous basis by government institutions (Bailey, 1994:294, cited by De Vos *et al.* 2002:323-324). They included documents such as the Constitution of the Republic of South Africa, Defence Review, White Paper on Defence, DOD Annual Reports, the 1997 DOD ETD Project Team 1st and 2nd Reports, and the DOD ETD Policy document. These documents were necessary in order to study the phenomenon sought for analysis. According to De Vos *et al.* (2002), "accessing them is often a problem owing to legislation on the confidentiality of information".

This is particularly true to the SANDF since most documents bear a security classification of 'top secret', 'secrete', 'confidential' or 'restricted'. In this case, the documents accessed and used for the study were normally public information. In addition, permission to access them was sought and granted by the Defence Intelligence unit of the SANDF.

The advantages associated with document analysis according to Bailey (1994:295) and Monette *et al.* (1998 cited by De Vos *et al.* 2002:325) were that the contents of the documents were not necessarily affected by the activities of the researcher, unlike surveys where participants were aware of the fact that they were being studied while producers of documents did not necessarily anticipate the analysis of their documents at a later stage. The disadvantage is that they may not be complete, lacked standard format, or are not available at all (De Vos *et al.*, 2002:326). Lastly, literature review, known as 'secondary analysis' is also used as means of data collection. This should not be confused with a secondary analysis that is normally associated with the reworking of statistical data in quantitative designs. Secondary analysis is defined by Dale *et al.* (1988:3), Grinnell (1993: 290), Hakim (2000:24) and Rubin and Babbie (2001:385) as the reworking of already analysed data over which the present researcher had no direct control or in which he had no direct involvement. These data were gathered from the available literature and, if possible, by attending distance learning seminars and conferences organised by such organisations as NADEOSA and SAIDE. Various writers associate this method with avoiding data collection (De Vos *et al.*, 2002: 329) and saving costs and time (Babbie & Mouton, 2002:265). The key problem with this method involves the recurrent question of validity (Babbie & Mouton, 2002: 265). They said when a researcher collects data for one particular purpose; there is no assurance that, that data will be appropriate for the research interests (*ibid*).

6.4 DATA ANALYSIS

Although there are no uniformly fixed guidelines in qualitative research, Neuman (1997:328), cited by Collins *et al.* (2000:244), cautions that its flexibility should not deceive us to believe that this type of research is an easy option. Merriam (1988) and Marshall and Rossman (1989) suggested that in qualitative research data collection and data analysis should be a simultaneous process. As such crystallization was done. Crystallization sought to open the researcher to maximum experiences within the analytic style (McMillan & Schumacher, 2001:463). An intensive reflexive simultaneous analysis was done by the researcher *(ibid)*. Data analysis began during the data-collection process. Schatzman and Strauss (1973), mentioned by Creswell (1994:166), said that qualitative data-analysis primarily entails classifying things, persons, and events and properties that characterise them.

Coding as data-analysis procedure was used. Coding is the process of dividing data into parts by a classification system (Schumacher & McMillan, 1993:486). Coding represents the operations by which data are broken down, conceptualised and put back together in new ways (De Vos *et al.* 2005:340). According to De Vos *et al.* (2005), this is the central process by which theories are built from data. The analysis steps that were followed in this study were suggested by Creswell (1998) and Stake (1995), as cited in Leedy and Ormrod (2001:150). A coding procedure utilises an open coding type. This type includes the process of breaking down, examining, comparing, conceptualising and categorising data (De Vos *et al.* 2005:340). During data collection and data analysis each sub-question was organised and the specific facts about the questions were arranged in a logical and chronological order as a simultaneous process. This included classifying and categorising data. Phrased answers by the participants were coded and given the first important letter of the category, classification and/or interview question.

A mixture of sources for the classification approach, as suggested by Schumacher and McMillan (1993:487), was applied. Classification of data emanated from the research question, sub-research questions, interview questions, and data themselves. Categories that assisted clustering the data into meaningful groups were identified. This process also emanated from the research question, sub-research questions, interview questions, and data themselves. Single instances were interpreted. This entailed that specific documents, occurrences, and other bits of data were examined for the specific meanings that they might have in relation to a specific sub-question. Patterns were identified. The data and their interpretations were scrutinised for underlying themes and other patterns that characterised the individual sub-question more broadly than a single piece of information could (Bogdan & Biklen, 1992:166). Then, synthesis and generalisations were made. An overall portrait of the research question was constructed. Thus, conclusions that may have implications beyond the specific sub-question were drawn. Many separate pieces of information pointed to the same conclusion.

6.5 REPORTING THE OUTCOMES OF THE INVESTIGATION

Lofland and Lofland (1984:168) suggested that although data collection and analysis were similar across qualitative research, the way findings were reported is diverse. The added that Miles and Huberman (1984) addressed the importance of creating a data display and suggested that narrative text had been the most frequent form of display for qualitative data (cited by Lofland & Lofland, 1984:168). The report on the current study, as suggested by

Leedy and Ormrod (2001:150), includes a rationale for undertaking this research. The value of in-depth study of the research question, how it contributed to the researcher's knowledge of the topic, is explained. It also included a description of the facts related to the sub-question. Specific institutions (or AoSs) and their distance learning programmes that were studied were described, as well as the setting and any other uncontested facts about distance learning in these institutions is described. An attempt here is both as thorough and as objective as possible.

A description of who was interviewed, documents analysed and secondary analysis in terms of the literature review was made. Patterns found in the interviews were discussed. Trends, themes, personality characteristics, and so on, which the data suggested, were described. Each pattern identified is supported with sufficient evidence to accurately portray the data. If some of the data contradicted the patterns proposed, however, those were described as well. Even though this exercise is aimed at interpreting as well as reporting the data, the aim is to present as complete and unbiased an account of the interviews as possible.

Lastly, a connection to the larger scheme of things is made. The connection made here took one or more of several forms. Distance learning in the DOD institutions and Arms of Services is compared with each other.

6.6 VALIDITY AND RELIABILITY

According to Vithal and Jansen validity is an attempt to 'check out' whether the meaning and interpretation of an event is sound or whether a particular measure is an accurate reflection of what one intended to find out; and reliability is about the consistency of a measure, score or rating (1997:32-33). In ensuring internal validity, triangulation of data is employed. To achieve triangulation of the information gathered via the interviews, findings were cross-referenced with information contained in the DOD documents such as the Defence Review, White Paper on Defence, DOD Annual Reports, the 1997 DOD ETD Project Team, First and Second Reports, and the DOD ETD Policy document. In addition, other military practitioners such as officers and non-commissioned officers provided comments related to types of examinations. As such, data were collected through multiple sources to include the focus-group interviews, individual (or personal) interviews and document analysis. The participants served as a check throughout the analysis process. An ongoing dialogue regarding my interpretation of the participant's reality and meanings ensured the true value of the data. In addition, the researcher's supervisor and co-supervisor constantly checked and gave the researcher advice throughout the progress of the study.

The results obtained from the sampled participants to this study applied to all subjects in the population being studied (Bless & Higson-Smith, 2000: 80). In other words, the results of the study were subject to generalizations. This meant that the sample of the study is representative of the population in question, that is, the practice of distance education at the institutions of the DOD or SANDF. The trustworthiness of the study is measured using the validity and reliability criteria. According to Pulkkinen (2003:[s.p.]), in theory, trustworthiness, i.e. credibility and validity of qualitative research, could be considered from two different perspectives depending on the epistemological foundation of the research and the epistemologically biased arguments of the evaluation (Pulkkinen, 2003:[s.p.]).

Ideally, both of the considerations are based on the same epistemological foundation *(ibid)*. These were the external evaluation of the trustworthiness of the research, had a different epistemic basis than the analysis itself, and this could be confusing. The researcher directly influenced only the epistemological basis of the research. As a result, the basis for the evaluation is set in an epistemologically relevant context. Thus, three types of validity were applicable. These were descriptive validity that refers to the factual accuracy of the account as reported by the researcher. The reality of the situation is simulated as closely as possible. Another type, the interpretive validity, is obtained to the degree that the participants' viewpoints, thoughts, intentions, and experiences were accurately understood and reported by the researcher. Lastly, theoretical validity is obtained to the degree that a theory or theoretical explanation developed from the research study fitted the data and is, therefore, credible and defensible.

To demonstrate these measures of validity, various strategies, as described by Johnson (1997) in Pulkkinen (2003:[s.p.]), were used to promote validity in this qualitative research. The researcher as detective looked for evidence about causes and effects. The researcher developed an understanding of the data through careful consideration of potential causes and effects and by systematically eliminating rival explanations or hypotheses until the final case is made beyond a reasonable doubt. The following strategies were utilised by the researcher, first of all: comprehensive fieldwork. The researcher collected data over an extended period of time. Initially data were collected from focus-group interviews. As the need arose, the researcher collected more data through the means of personal (or individual) interviews. Low inference descriptors were also used. The use of participants' accounts is utilised and this is evidenced by direct quotations from their notes. Triangulation, that is, cross-checking of information and conclusions through the use of multiple procedures of sources, is used. Corroboration is achieved when different procedures or sources were in agreement.

To help understand a phenomenon, data triangulation in the form of multiple data sources is used. These were focus group interviews, personal (or individual) interviews, document analysis, and a literature review. In addition, to help study a phenomenon, methods triangulation in the form of multiple research methods is used. To help interpret and explain the data, theory triangulation that is, multiple theories and perspectives were used. In order to ensure reliability multiple methods of data collection and analysis were used (Merriam, 1988). Pattern matching, that is, predicting a series of results that formed a "pattern" and then determining the degree to which the actual results fitted the predicted pattern is used. As such, immersion or crystallization styles, which strengthen reliability as well as validity, involved becoming thoroughly familiar with a phenomenon, carefully reflecting on it and then writing an interpretation is done. Finally, data-collection and analysis strategies were reported in detail in order to provide a clear and accurate picture of the methods used in the study.

6.7 THE ROLE OF THE RESEARCHER

The ideal is that a quantitative researcher should be detached from the study to avoid bias (Schumacher & McMillan, 1993:15). Qualitative researchers became immersed in the situation, present or past in the phenomenon being studied (Schumacher & McMillan, 1993:15). In qualitative research, particularly, the role of the researcher as the primary data-collecting instrument necessitated the identification of personal values, assumptions and biases at the outset of the study. Perceptions about of distance student drop out in the SANDF and how this problem could be alleviated had been shaped by the researcher's personal experience.

Between 1990 and 1995 the researcher was a coordinator of Home Health Aide programme at the University of the District of Columbia in the United States of America. This program is designed to train adult students to take care of the elderly at their homes, nursing homes or other health care institutions. It is also a conventional three-month programme where learners also withdrew or dropped-out from this programme for various reasons. This programme is located within the Department of Adult Education of the University where, also during the same period, the researcher had been a student lecturer in the Adult Education graduate programme and had received his M.A. in Adult Education and M.A. in Administration of Higher Education.

The Adult Education graduate programme was delivered in a distance learning mode and, here again, adult students dropped-out of the programme for various reasons. As far as the

researcher could recall, the only mechanism by the University to alleviate the problem, was to support the students through counselling and motivation. Between 1996 and 1999 I was an ETD Staff Officer for the Service Corps in the DOD. The Service Corps was responsible for preparing members of the DOD for civilian life. These members were trained for vocational skills by various training institutions around the country. More than 50% of these students did not complete their training, again, for various reasons, but the DOD had no control of this problem.

Between the years 2000 to present the researcher had been a curriculum designer and a researcher at COLET. COLET is the first ETD institution in the DOD to be accredited by SAQA and to institute the NQF programme. It is offering SAQA's Occupationally Directed qualifications to DOD members through the distance learning mode. In 2002, the then Commandant of COLET until 2004, directed the researcher to undertake a survey on the causes of non-completion of COLET programmes, whereupon the researcher assigned another researcher at COLET to continue with the survey. This survey questions and answers are depicted in Appendix B.

During the said period, the researcher's supervisor made available to the researcher her 1999 unpublished dissertation with UNISA on Distance Learning in the DOD of which the researcher referred to mostly in the study. In 2003, the newly appointed Chief of Training Command, instituted a Task Force, under the direction of COLET Commandant, being its Chairperson, to do a thorough development work with regards to distance learning in the DOD. The researcher was also the member of this Task Force responsible for Adult Education. The Task Force was instrumental in developing the department of defence distance learning policy, which has yet to be promulgated.

The researcher believed that this exposure enhanced his awareness; knowledge and sensitivity to student drop out from learning. He brought knowledge of both working with adult distance students and the reasons of students dropping out of learning programmes in the DOD. Particular attention is paid to the reasons of adult students dropping out of distance learning programmes. Due to previous experiences of distance learning, the researcher brought certain biases to the study.

Although every effort was made to ensure objectivity, these biases may have shaped the way the researcher viewed and understood the data he collected and the way he interpreted his experiences. The researcher began this study with the perception that the nature of the

military, being an autocratic organisation, also contributed to student drop out in distance learning in the DOD. This is because the military is prescriptive in nature. The military is by nature descriptive, rules- or standard-based; objective oriented and enforced its decisions, sometimes without seeking opinions from its members.

6.8 CONCLUSION

This chapter outlined the methodology and strategies of the empirical study. It is mentioned that the research design is based on the qualitative approach. The interview as an instrument, document analysis, and; a literature review were presented as data-collection methods for the study. Three institutions from the SANDF's Arms of Service (AoSs), namely; the Army College from the South African Army (SAA), the Air Force College from the South African Air Force (SAAF), and; the School for Military Training from the South African Military Health Service (SAMHS), participated in the study. The South African Navy did not take part as their institutions were no longer conducting their studies through distance learning. The focused groups and individuals were available to the researcher to conduct interviews. These focused groups and individuals comprised distance learning course managers, course coordinators and instructors or facilitators in those particular institutions. The researcher also decided to replace the unavailability of student interviews with anonymous student reports normally collected by programme managers at the end of a programme. It has been discussed earlier in the study that the reason for focusing on the distance learning institutions and practitioners would assure the feasibility of the current research.

It is pointed out that data collection and data analysis is a simultaneous process for the purpose of this study and that generalisations had to be made. The report on this study, as suggested, included a rationale for undertaking the study. The value of an in-depth study of the research question and how it contributed to the researcher's knowledge of the topic is explained. Descriptions of the facts related to the sub-questions were also included. Specific institutions (or AoSs) and their distance learning programmes that were studied were described and compared.

Also, in order to ensure reliability multiple methods of data collection and analysis were used, which strengthened reliability as well as validity. Lastly, the role of the researcher is discussed. The researcher's perceptions about of distance student drop out and how this problem can be alleviated in the DOD have been shaped by the researcher's personal experiences.