CHAPTER 2

A CHANGING LEARNING ENVIRONMENT: MODERN TO POSTMODERN

1. INTRODUCTION

Chapter 2 describes the modern learning paradigm which laid the foundation for general education, but also music education for many years. It will also explore the postmodern paradigm and its profound influence on the learning environment, as well as the needs of the postmodern learners. The postmodern learners have to live and learn in the complex postmodern world and it is therefore crucial to develop the learning potential of all learners. Music may play an important role in achieving this aim, as it bears the unique quality of possessing the potential of developing the whole person - intellectual, emotional, spiritual and psychomotor.

Two of the perspectives or paradigms, which influenced education in the Western world, are the modern or Classic Scientific Paradigms and currently the postmodern or Future Paradigm. An understanding of the importance and influence of a certain paradigm is vital, because according to Kuhn (1970:85) a paradigm change is a reconstruction of the fields that change some of the most elementary, theoretical generalizations, as well as the methods and applications. It involves a different world-view, different assumptions made, questions asked, evidence taken and methodologies used. Kuhn (1970:175) states that a paradigm controls the *"methods, problems, and standards"* a community use, and it forms the broader *"constellation of beliefs, values, techniques"* of the people.

As mentioned before, the South African education paradigm of the past was influenced, as the rest of the world, by the Western Science Paradigm of the modern era. Although the postmodern paradigm is becoming a reality in education, the modern paradigm is still actively part of the mind set of most South African educators. Just as the people at the end of the Middle Ages and Renaissance did not know they were entering a new era, so too are the South African educators, at the end of the modern era. One often finds that teachers still hold a modern view, while learners grow up in a postmodern society with another set of basic believes. This creates confusion and misunderstanding for learners and educators.

Steyn and Hay (1999:122) claim in the words of Coulter:

> *The teacher, standing at the front of classrooms, hold a modern view. Students, sitting in their rows of desks, hold a postmodern view.*

We have reached the end of the modern era and are facing a **paradigm shift**. We will have to find new resources upon which to shape a new society and learning environment. Smart (1992:142) agrees that the very project upon which the hegemony of the West has been predicated is now in question in the debate over the possible closure or end of modernity. Kirsten (1987b:18) supports this perception as he maintains:

> *The propagated sentiment is that the modern person has exhausted its cultural, social and political resources and has reached the end of an era* (translated).

It has become necessary to explore the postmodern paradigm to bring about an understanding of the current world the learner develops in. It is thus important to explore not only the learning environment of the learner, but also the postmodern society in which the learner lives. Before this can be done, it is necessary to understand the main trends of the modern paradigm.

2. OVERVIEW OF THE MODERN PARADIGM

The word modern comes from the Latin word *modernus* which refer to now or the contemporary age. Smart (1992:146) explains that Habermas contends that the term was initially used to distinguish an officially Christian present from a pagan past. The term *modern* was used to situate an existing epoch from the past antiquity. It implies that in some respects the present differs significantly from earlier times. It refers to a discontinuity between now and before. Cahoone (Rossouw 1995:4-5) claims that the most basic or primitive meaning of the word *modern* implies the following:

- ✓ A historical consciousness, which refers to an awareness of and a concern for historical change.
- ✓ A historical discontinuity, which implies some criterion of sameness and difference.

- ✓ The primitive meaning of the word may apply to one phenomenon or to many types of phenomena, but the phenomena exhibit the same common pattern or theme.

- ✓ What is *modern* may be evaluated positively or negatively.

A more complex meaning of the word *modern* according to Cahoone (Rossouw 1995:5) is the following:

- ✓ *Temporal* (between now and before) which refers to seeing our own age as different to all past ages of our culture.

- ✓ *Geo-social* (between us and all others) which means what distinguishes our present society or culture from all present or past versions of all other societies or cultures. Modern to all human history.

Cahoone (Rossouw 1995:7) maintains that this more complex meaning of the word *modern* is not relative to the culture of the user, but has been *universalized,* by that Europeans mean some set sociocultural traits of Europe. It disconnects with the traits of all previous European and all non-European societies and cultures, which implicates that modernity is not intrinsically or necessarily European. Lötter (Rossouw 1995:38) agrees that modernity is by no means monolithic, but should rather be seen as consisting of several components which are compatible with various, though not all, cultural lifestyles.

Modernity typically refers to the era accompanied by the industrial revolution in England, the political revolution in France and by the secularizing influence of scientific rationalism emerging from the Enlightenment in the sixteenth and seventeenth centuries. It refers to economic growth and capitalism (Kirsten 1987b:21-23).

Modernism is usually taken as a paradigm change in the arts towards the end of the nineteenth century. It is a rejection of bourgeois values through literature and different avant-garde movements such as the surrealists and the futurists. Söhnge and Arjun (1996:88) argue that ideas which originated from modernity attained -ism status. It developed into philosophical, scientific-technology schemes of thought and leads to a paradigm change.

Smart (1992:157) proposes Harvey's five broad phases in the development of modernism:

- ✓ The Enlightenment phase assumed the world could be controlled and rationally ordered. Rust (1991:613) quotes Habermas who claims that the Enlightenment can be divided into three autonomous spheres, namely *"objective science, universal morality and law and autonomous art according to inner logic"*. This would lead to an understanding of the world and self, moral progress, the justice of institutions and the happiness of human beings. This hope began to fall apart in 1884 with the beginning of the second phase.

- ✓ The second phase is characterized by an accelerated industrialization, massive urbanization and political disagreement which gave rise to an increasing diversity of forms of experience, systems of thought and representation.

- ✓ The third phase is the transformation of forms of representation and knowledge, of literary text, art, music, linguistics and science derived from growing disenchantment with the Enlightenment.

- ✓ The next phase began after 1945 and led to *high* modernism.

- ✓ In the late 1960s the first traces of a turn to postmodernism could be detected. Rust (1991:611) states that it appears as if the current postmodern movement is perceived as either a periodization concept, referring to a period or era, distinctly from the modern period or as a period or era that does not represent a break from modern times, but another style of discourse and a theoretical orientation for explaining events in competition with other theoretical orientations that abound the modern world.

2.1 THREE PERSPECTIVES OF THE WESTERN SCIENCE PARADIGM

Doll (1986:10) distinguishes three broad paradigms or perspectives as typical of the western paradigm, namely:

- ✓ A Classic Christian Paradigm (Aristotle, Ptolemaeus and Thomas Aquinas).

- ✓ A Classic Scientific Paradigm (Copernicus, Descartes, Newton and Einstein).

- ✓ A Future Paradigm (Einstein, Sohr, Heissenberg and Prigogine).

Two of these paradigms, the Classic Scientific or Western Scientific Paradigm and the Future Paradigm, concern this study and will be discussed.

2.1.1 THE CLASSIC SCIENTIFIC PARADIGM

The Classic Scientific Paradigm is also known as the modern paradigm. During the sixteenth and seventeenth centuries the scientific paradigm slowly emerged (Enlightenment). Names like Copernicus, Descartes and Galilee are synonymous with the Classic Scientific Paradigm. Galilee maintained that the universe was written in the language of mathematics. Newton, in the late seventeenth century, described the universe in terms of principles. One of these principles was gravity, which determined the orbit of the planets as well as the falling apple to earth. The orbiting planets and the falling apple follow the same rules of a single uniformity that dominates the whole universe. The discovery of nature's laws were later seen as an attempt to gain control over nature (Doll 1993:23-26). It was believed that humans could control the universe, because nature is bound by rules. And control plays a very important role in this paradigm. Doll (1993:26) helps us understand the impact of this reasoning by quoting Descartes with the following:

> *[There are] certain laws which God has so established in nature.....*
> *That after sufficient reflection we cannot doubt that they are exactly observed in all which exists or which happens in the world.*
> (Discourse on Method, 1637/1995, p.27.)

The cosmos was viewed as simple, stable, organized, determined and a closed system. Doll (1993:57) explains that closed systems exchange energy, but does not exchange matter. An example is the mechanical devices of gears. There are a transference and concentration of energy, but no spontaneous development of energy nor any transformation of matter into energy (transmit and transfer).

The modern paradigm often gets described as objective, measurable, predictable and controllable. Measurement plays a very important role in the Classic Scientific Paradigm. A linear scale was introduced with an ideal at the top and a practical norm in the middle and all other positions are related to these two. Events, experiences and even intelligence could now be quantified (Doll 1993:35).

Another characteristic of the Classic Scientific Paradigm was the privileged position of

mathematics and the theoretical over the observational and the practical. Doll (1993:35) agrees that the individual's own sense of competence and experience got downgraded in favour of copying or applying the performances others had devised. The curriculum was set on this set-performance model and deviation is considered as *irrational*.

The concept of causality (cause-effect) was a Classic Scientific Paradigm invention, where for every effect there must be a prior cause. It was the natural way this paradigm looked at change and it also influenced the way problems were perceived. It was believed that change did not happen spontaneously and the same cause would have the same effect. It became modern science's guiding principle (Doll 1993:36).

This gave way to the industrial age and society got a technological cast. The benefits derived from science were believed to create wealth through industrial production. New demands where made on people, such as technical experience and a new breed of man developed. Slogans such as *save the minute* became a motto in American factories as well as the classroom. The concept of industrialization had an effect on the whole world. World War II was a demonstration of technology and science (Doll 1993:39-47).

A critical reflection on the modern paradigm indicates that this paradigm has promised and delivered a great deal to society, but also failed to provide solutions to a wide spectrum of problems. Lötter (Rossouw 1995:42) maintains that modernity promised faith in human progress with effects like new opportunities for all people, increased wealth, improved living conditions, social freedom, a happier life. Cahoone (Rossouw 1995:6-7) mentions positive developments such as technology, scientific practices, forms of industrial production and higher living standards. The problems mentioned by Dickens and Fontana (1994:3) are world wars, death camps and the nuclear devastation of Hiroshima and Nagasaki. Kirsten (1987b:18) declares:

> *It rather seems that as man's technocratical liberation improves, new opportunities and means for all kinds of sophisticated injustices, clinical dehumanization and subtle discipline are generated* (translated).

The result is uncertainty, normative and ethical problems as well as political anarchy. The doubt includes all walks of life such as science, art, politics, religion, relationships between people and teaching and training (Söhnge 1994:5). The same dark picture is being sketched by Coetzer and Le Roux (1996:82) who claim that an evaluation of the modern world reveals

that technologically and scientific ingenuity has not prevented a sick world with pollution, overpopulation, poverty, famine, homelessness, affective neglect, discordant marital relations, hijacking, aids, crime, violence and war.

The fundamental problem which arose in the late twentieth century is that knowledge was not objective and absolute anymore, because science is practised within a theoretical framework which is influence by ideology (Söhnge 1994:5). Research by Kuhn (1970:103) clearly indicates that scientific knowledge is related to the contexts of a specific paradigm - it tells about the population and the population's behaviour.

It is clear when studying these suppositions that we cannot continue on the road of the Western Scientific Rationality Model, especially not in a complex political and multicultural society as South Africa. South African education needs a paradigm shift from a modern paradigm to a postmodern paradigm. Slattery (1995:233) maintains that the Newtonian physics has attempted to impose uniformity, which led to many of the problems experiencing in education today. He advocates a curriculum model based on a complex, multidimensional and a metaphoric system.

(i) MODERN SOCIETY

The Concise Oxford Dictionary (1995:1370) defines the word society as the sum of the human condition and the interdependent functioning of their activities. Cahoone (Rossouw 1995: 2) defines society very simply as what social members are and do. Both definitions focus on what people are and what they do. The modern paradigm had an influence on the human condition and what people do. The great influence of the modern paradigm on society becomes apparent when Lötter (Rossouw 1995:39) indicates the following:

- ✓ The emergence of modern science revolutionized our view of technological development and the world. Technology changed the way we perceive knowledge as Dickens and Fontana (1994:4) point out that new information technology has undermined traditional concepts of knowledge.

- ✓ Capitalist mode of production, which is a system of commodity production for competitive markets and centred upon the relation between private ownership of capital and propertyless wage labour.

- ✓ Modernity enabled industrialization. Capitalist mode of thinking and industrialization have several affect on society, such as the creation of several new environments, but unfortunately the destruction of natural and human environments, urbanization, mass communication and speeding up of the tempo of life.

- ✓ The development of nation-states, coupled with administrative control over specific geographical areas. The developing nation-states served to replace the values and believe of the people to individualise, faith in progress and other to make economies work.

- ✓ The development of liberal democracies premised on human rights.

- ✓ Violence.

A critical analysis of the modern paradigm, with its positive and negative influences can be interpreted in the following ways according to Cahoone (Rossouw 1995:12):

- ✓ Contemporary society and culture are intrinsically dynamic.

- ✓ Modern society is characterized by progress.

- ✓ The tendency of modern society is towards integration such as interdependence, homogenization, political centralization and unification.

- ✓ The tendency towards disintegration such as specification, fragmentation, pluralization and decontextualization (loss of tradition, community, a public sphere etcetera).

- ✓ Modern society is threatened by irrationality.

- ✓ The modern society and culture are characterized by deautonomization (erasion of individuality and autonomy).

- ✓ The modern society exhibit alienation (a loss of what is genuine, original or real in human life).

✓ Modernity exhibits increasing functionalization.

2.1.2 INFLUENCE OF THE MODERN PARADIGM ON THE LEARNING ENVIRONMENT

Since the times of the Enlightenment, the Classic Scientific Paradigm had a profound influence on education right through the world. Söhnge (1994:9) states that it is important to bear in mind that educators grew up and were trained in the Classic Scientific Paradigm. Their believes, standards, values etcetera were formed by the Classic Scientific Paradigm. This paradigm was regulated by an industrial society which viewed education as standardized, specialized, synchronized, concentrated, maximalised and centralized. Doll (1993:43) picks up this theme by stating that American public schools became dull, mechanical and repetitious. Teaching methods or assembly line approaches were used and were functional in its time. Actually it can be viewed as dehumanizing of the learners.

Education was practised as a closed system which was product driven and function in the manner of a machine. Doll (1993:2) claims that the future was seen as teaching machines, programmed learning and a teacher-proof curriculum. These mechanical metaphors set the foundation for modern science and the scientific curriculum that is being applied and is still applied in many cases. Doll (1993:28) extends this view by the following:

> *In this machine-oriented curriculum the goals lie outside, and are determined prior to, the instructional process; once firmly set they are "driven through" the curriculum. The teacher becomes the driver (often of someone else's vehicle); the student becomes at best a passenger, at worst the object being driven.*

Education was a measurable process. Education was defined in terms of test scores. The intelligence quotient (IQ) was a central concept to many educators. Underlying was the behaviouristic principle of stimulus-response and simple repeated associationism which was seen as a vital method of learning. Hjelle and Ziegler (1981:229) explain that Skinner declared that behaviour is lawfully determined, predictable, and environmentally controlled. Results were measured in the light of fixed standards. Class work was memorized and reproduced. It was a concept found in the industrialized society.

Söhnge (1994:9) and Doll (1993:32-37) refer to the learning environment in modern times as a closed system with a hierarchical linear, subject-object relationship between the

educator (subject) and learners (object), the educator with normative authority, who transfers knowledge to the learner. Personal feelings, intuitions and experiences were not reckoned as a source of knowledge. Knowledge exists *outside*. It could be discovered, but not created. There is a gradualness to progress and a linear connectedness of development. It was believed that the curriculum must be organized in sequential steps with no gaps or breaks. It is clear when critically observing this practice of curriculum thought that it brought alienation between educator and learner.

Some of the characteristics of the modern learning environment can be listed as follows:

✓ Time was not seen as an active ingredient, necessary for developing the creative possibilities inherent in any situation. It was perceived as a restrictive agent. Time was perceived as linear and a *coarse to be run*. To save time by *doing as you are told* was part of the *standardization* and *being efficient* process introduced by the psychologist, Spencer.

✓ Curricula were separated into subjects or as some writers put it, fragmented. Curricula were considered as units arranged in a linear order. Learning is defined in the number of units covered and mastered.

✓ The fact that curriculum content had to be interpreted, was an indication that a hidden curriculum could be present.

✓ Encapsulation or isolating the learner from other influences.

✓ Some Calvinistic tone which assumes that humans have by nature deficits was propagated by Bobbit. He saw the curriculum as focusing on deficits. Here lays the origin of curriculum goals stated in precise, practical and measurable terms (Doll 1993:49).

✓ In the nineteenth century the focus was placed on the personal qualities the educator should possess. These qualities were virtue, sobriety, industry, frugality, chastity, moderation and temperance. This quality remained pervasive until the twentieth century and is still found in schools today (Doll 1993:47- 48).

✓ The Tyler curriculum model of the 1960s is a model with a linear ordering and a

> separation of ends from means. It is a curriculum model with present goals, selection and direction of experiences and evaluation. The end is directed towards a purpose and in an industrial and capitalist society has taken the form of a job (Doll 1993:54).

Looking back on five hundred years, the influence of the Classic Scientific Paradigm is mostly being assessed as a paradigm which served a purpose for its time, but is viewed as redundant for the present era. The present era has different characteristics and its people have different needs. If these characteristics and needs of the present era are not accounted for, it may lead to negative effects. There were counter movements in the twentieth century against the negative influence of the modern paradigm, such as the humanistic movement. Hjelle and Ziegler (1981:361) claim that humanism has given rise to a radically different image of human nature, namely that persons are basically good, worthy of respect and that they will move to realization of their potentialities. A more child-centred approach to education was also proposed.

A paradigm change is apparent at the end of the twentieth century. The implications of modernity for the learning environment can be summarized in the words of Söhnge (1994:9):

> *According to that, education is determined by a prescribed structure, regulations, content and relations which is destined to eco the order of nature (and community) with the help of objective scientific knowledge and dogmas* (translated).

3. THE POSTMODERN LEARNING ENVIRONMENT

3.1 INTRODUCTION

The postmodern concept was first introduced in art and literature. In 1870 an English painter, John Watkins Chapman, described a painting as postmodern. The same concept was used in literature in 1934 and again in 1942 to describe a related tendency in Hispanic poetry (Dickens and Fontana 1994:1-2). In the 1950s and 1960s postmodernism was used by Irving Howe and Harry Levin in literary criticism. The concept also penetrated the social sciences and in the 1970s it was widely used in architecture, art and film. In the mid 1970s it entered the philosophy circles in Europe by people such as Kristeva (1980), Lyotard (1997/1982), Habermas (1981a/1985a), Wellmer (1985) and Kirsten (1987a:405). A discussion on postmodernism in the social sciences reappeared later in the 1980s primarily under the

influence of French poststructuralist theory (Dickens and Fontana 1994:1-2).

Although postmodernism reappeared, it was not readily accepted. The most common complaint was that the language of postmodernism is obscured by words like deconstruction, meta narratives, essentialism, pastiche, intertextuality etcetera. Postmodern ideas were accused of being too remote from every day, contemporary life. It is easy though to demonstrate that postmodernism exists in practice, whether or not in theory. The contemporary worlds of architecture, literature, fashion, cinema, business management, market research and advertising are shot through with concepts from postmodernism (Stronach and MacLure 1995:15-16). An example of the existence of contemporary life is when actor Don Johnson of *Miami Vice* was chosen by the fashion magazine *Glamour* as man of the year, because he personified the *postmodern macho* personality (Kirsten 1987b:33).

A new paradigmatic frame is developing, but the changing of the paradigms present the education world with concerns. Aasen (1993:3) explores the different concerns by stating that problems and insufficiencies in the learning environment come from the changing society. Society has presented the school with new fundamental principles and tasks. This leads to visible and invisible stress factors for the educator, because schools are judged by very different and critical criteria. Another problem facing the learning environment is that some use modern principles, while the postmodern condition has been accepted and practiced by others in the field (Steyn and Hay 1999:122). Stronach and MacLure (1995:25) provide the example of Hargreaves as an indication of the dilemma for the educational world:

> *He posits a world moving from modernity to postmodernity. He then creates his analytical boundaries by labelling schools "modern", and society "postmodern", recommending that the former catch up by adopting the good bits of postmodernity (some forms of flexibility, flatter hierarchies etc.).*

In exploring the postmodern paradigm an effort is being made to assist the educator in understanding the learning environment, where society or the general cultural background is not always supportive of the learning environment.

3.2 PROFILE AND CHARACTERISTICS OF THE POSTMODERN PARADIGM

3.2.1 CORE ELEMENTS OF THE POSTMODERN PARADIGM

(i) REALITY

The Classic Scientific Paradigm describes *reality* as rational, stable and predictable. In complete contrast, reality in the postmodern or future paradigm often gets described as complex, relative, multiple, temporal etcetera. Reality is also not viewed as a closed stable system, as in the modern paradigm, but as an open system. Doll (1993:57-58) explains an open system as a system which exchanges energy and matter, and needs fluxes, perturbations, anomalies and errors to tap the creative powers inherent in instability. These two qualities can be transformed into one another, eg. atomic explosions. This quality of openness is meaningful, because human beings are living systems, per se open systems. They need the continuous change, irregularity of behaviour and errors to exercise their full potential.

Reality is a complex, human creation which does not exist objectively *out there*. Human beings mould reality according to their own diverse needs, interests, prejudices and cultural traditions. They have diverse experiences and life stories, which postmodernists refer to as *own personal narratives*. Postmodernists reject the notion of one great meta narrative, for example the Enlightenment narrative, in favour of own experience.

(ii) RELATIONS AND PERSONHOOD

The modern paradigm envisaged personhood as an individual with a steadfast core with a stable personality and character. In the postmodern paradigm the view of the person with a steadfast core has been replaced by the perception of personhood as an ever-changing *self*. Parker (1997:150) compares the postmodern person with the symbol of Gemini (twins): The person with numerous selves in different contexts and an identity-switcher. Relationships play a very important role, because the individual is unknowable and non-existent except within a relationship. Steyn and Hay (1999:121-123) share this postmodern interpretation of personhood when they maintain that personhood reflects a plurality of interpretations and multiple truths. The person is described as *uncontrolled*, decentred (no central core, but a product of social construction), multiple (no fixed identity), transgressive (go beyond the limits), fragmented, incoherent, in a constant process of construction and deconstruction (ever changing, depending on the context of social position), and in a state of non equilibrium with a situational identity.

Multiculturalism is an important postmodern concept, in the acceptance that people belong

to different cultural groupings. Postmodernism is opposed to multiculturalism where sameness, universality and homogenity are accentuated. Postmodernists believe that the self is strongly influenced by its surrounding culture and changes with culture. They neglect the individual in support of specific groups within larger culture, eg. ethnicity, gender and religion.

(iii) KNOWLEDGE

Rossouw (1995:77-78) defines rationality *"as the standard that a society requires for making intelligible and meaningful statements on reality"*. Medieval society required that statements should be logically coherent and compatible with the Christian understanding of reality as defined by the church. The modern society rejected the medieval notion of rationality. It was believed that the modern paradigm had a superior potential to produce more sophisticated and universally valid knowledge. This notion of rationality stimulated the development of science and technology, which led to a sophistication of knowledge about the natural and social world as well as an unheard control over it. When strange new objects were, discovered in the universe like quasars, pulsars, exploding galaxies and stars collapsing into black holes, a different realization about knowledge started to surface. Early in the twentieth century Heisenberg and other scientists disclosed that certainty and control cannot exist in the micro world of the subatomic. Later Gödel proofed that the foundation of mathematics could not be proven in terms of consistency and completeness (Doll 1993:60). Such pronouncements changed the modern conceptualization of knowledge.

The other dilemma that surfaced was that values, goals and meaning are essential for our survival, but the dominant rationality of our culture does not allow for it. A broader view of rationality is advocated by the postmodernists. Smart (1992:142) quotes Lyotard who claims that *"the status of knowledge is altered as societies enter what is known as the postindustrial age and cultures enter in what is known as the postmodern age"*. Van der Walt (1988:194) claims that the Enlightenment rationality with preference for theory rather than praxises, is changing to a view where everyday experience is at the forefront. There is some growing consensus that human behaviour is not exclusively motivated by independent rational thinking. Other dimensions of life like socialization, culture, ideologies, believes, power, emotions, disposition etcetera plays an important role in the process of acquiring knowledge.

Postmodern thinkers maintain that we should not perceive ourselves as seeking to uncover a pre-existing reality, but we are part of the interactive process of knowledge creation. What

we *drive* at is autobiographical, an own *personal narrative* of an own particular site in the world. There is no objective, universal or autonomous body of knowledge, but rather guiding or enhancing of the capabilities for extracting information from an own environment. Doll (1993:61-62) reflects the same view when he states that the grand narrative of the past is being replaced by own experience or an own personal narrative. A personal narrative is achieved through dialogue and communication and it leads to a social vision where the right of others are honoured and respected. There is not only one right way, but multiple perspectives. It is an eclectic, yet local integration of subject/object, mind/body, curriculum/person, teacher/student, us/other. This process is not achieved through negotiating, it is not created or found, but it is achieved through living.

There is no centre when it comes to knowledge. There is an absence of anything at the centre or a core truth, thus an emphasis on the margins and a shift to the borders. Van Niekerk (1996:211) states:

> *Complete rational penetration of a phenomenon of the total reality is not possible. Certainty, in an absolute sense it is just not rationally possible* (translated).

Rossouw (1995:86) feels that expertise must be enriched and informed by the experience of those on the receiving end of expert opinion. Western scholarly tradition and white, middle-class, male bias should not be seen as the centre to which other merely contribute. Rossouw (1995:86) claims that:

> *Postmodern culture insists that those with expert knowledge are not the only ones who should be listened to when making decisions.*

Another postmodern concept which has an effect on the way knowledge is perceived, is called deconstruction. Deconstruction aims at demystifying a text by ripping it (everything - persons, events, institutions) apart and in doing so reveal arbitrary hierarchies and presuppositions. It examines what is left out, excluded, unnamed, concealed and what is repressed. An example of deconstruction in the postmodern society is for instance the numerous liberation movements, including ethnic groups, minority groups, neighbourhoods, alternative lifestyle groups, single-issue groups such as gay and lesbian rights, feminists, non a nuclear world, *right to life* legislation and religious revival in Europe and North America (Rust 1991:617).

Dickens and Fontana (1994:8) define deconstructionism as a method of revealing the radical contextuality of all systems of thought. Stronach and MacLure (1995:29) define a deconstructive approach as a more plural strategy, identifying a *field of metaphors* wherein multiple and dynamic possibilities for meaning may be generated.

3.2.2 POSTMODERN SOCIETY

The four aspects of the postmodern society under discussion in this study are the technological postmodern society, the visual postmodern society, marginalized and rejected groups in society and violence in the postmodern society.

(i) THE TECHNOLOGICAL POSTMODERN SOCIETY

The 1960s has been identified as the time when modernism and modernity began to falter and a new international era was taking form. What makes the new era so important is that an information society developed where technology plays an enormous important role. The implication is that the tempo and quality of life have changed completely. It is said that we live in a global village, because of the ubiquitous abstinence availability of knowledge and information. Rust (1991:620) quotes Alvin Toffler, who claims that speed has become the most important element of the postmodern society, because it is a society where advanced technology, particularly electronics, speed up production and distribution time. Rust also mentions Charles Jencks who calls it *"an instantaneous, 24-hour information world"*. As mentioned technology also changed the quality of life, making it more effective.

(ii) POPULARIZING OF MUSIC IN THE POSTMODERN SOCIETY

One of the most revolutionary results of the Western Scientific Age of the late twentieth century is the invention of the powerful technical means of mass music transmission, such as film, radio, recording and television. Music has become accessible to the whole of mankind and so changing the character of contemporary music culture, as well as the constructing of a new reality. The new reality changed the people's thoughts, perceptions and values. In terms of communication people live in a so called *global village* with rapid transportation of happenings all over the world. Popular music styles have prolific exposure, sell thousands of recordings and soon are replaced by some other popular idol, group or form (Hoffer 1976:38-39).

Our schools are administrators of high culture, but in the postmodern society popular culture has to be included in the curriculum as part of the learner's social environment. Postmodernist views the culture of every person as important. Rust (1991:624) discusses the difference between Americans who have always taken pride in their democratic life, which includes democratic art. In Europe popular culture is viewed as subversive or worse reflecting a trend towards Americanization. In the developing world the difference between traditional and high culture are changing rapidly. Spies (1997:62) argues that music as an art form (classical music) has lost its traditional dignified position in the postmodern society. It can also be perceived as a process of social transformation and be identified as a cultural revolution. In step with postmodern thoughts on scientific knowledge, music has lost its intrinsic qualities through *popularizing* it. In this process music has changed from an art form to a consumer item.

This opinion gets support from Rust (1991:624) who mentions Huyssen who recognizes:

> *.....a breaking away from the safe categories and established institutions and harbored art, including the academy, the museum, the art gallery and the concert hall to allow "a new freedom and a cultural liberation". However, the academic world faces the unsettling condition of having lost its ability to act as the definer and preserver of cultural standards, which have been synonymous with high culture.*

The criticism against music as an art form (classical music) is that it is elitist and unaccessible to most people. Spies (1997:68) points out that this is not a new development, considering that the composer, Richard Wagner, wrote in *Das Kunswerk der Zukunft* (1850) that music can only bestow its pleasures on people with an understanding of classical music which is only possible after a study of it which is far removed from daily live. Wagner was aware of the social conditions of the time, where classical music was also unaccessible to many people.

In the 18th century, the Esterhazy family asked Haydn to create music whenever they had a need for it. Only the wealthy were allowed to join the circle. Today recording of the music of Haydn is available to anyone to enrich the lives of many people.

This postmodern condition is an important change to society in the late twentieth century, which also influences education. Benner (1976:37) points out that:

> *Mass communication, travel and mobility, technological resources, shifting value systems, and changing life-styles lead to the recognition:(i) that there are many logically-valid and aesthetical-productive systems of sound and silence organization; (ii) that pluralistic societies accommodate variation and diversity in musical sources, forms, functions and styles; and (iii) that music is both divergent and convergent.*

The music education environment will have to acknowledge the change away from art music (classical music) to a form of music that is part of the world the learners live in.

(iii) THE VISUAL POSTMODERN SOCIETY

In close relation to the technology world, is the visual world of film and television. Denzin (1991:vii) defines the visual world in the words of Baudrillard as a world with *"an intense preoccupation with the real and its representations"*. He argues that this society only knows itself through the reflection that flow from the camera's eye. Other writers like Denzin (Dickens and Fontana 1994:184) feel the same and states that postmodernism refers to a new form of society that is radically transformed by film and television into a visual video world. Shopping malls with all its visual information and attractions, television soap operas, situation comedies, evening news, films and computer are the social worlds of the postmodern society.

(iv) THE MARGINALIZED AND SOCIALLY REJECTED PEOPLE IN THE POSTMODERN SOCIETY

Another important development of the postmodern society is the emphasis which switched to those who have been marginalised and socially rejected by modern society. Kanpol (1992:21) calls this phenomena in the postmodern society, *difference*, and feels that it has become indispensable to understand various groups' plights and their relationships to oppressive forces in society. Kanpol (1992:21) contends:

> *The world finds itself increasingly in a crisis of difference, and we can no longer sanctimoniously count on a harmonious society that simply embraces a dominant status quo and its values and norms.*

He describes the current age of democratic revolution (East and West Germany and Russia)

and massive immigration (Ethiopians, Russians, and Asians) as an indication of hope that through revolution and immigration, it is possible to bring about a democratic society where individual and group oppression, subordination and alienation will be erased. Rust (1991:617-619) believes that we are witnessing a shift away from universal belief systems towards a plurality of belief systems. Never has it been so hard to reach consensuses, because it is an indication that differences matter and that distinction can and ought to be fought over. He maintains that solidarity between groups can come through the participation of fringe groups. There is a possibility of the emergence of a type of direct democracy, a sense of a connectedness with life's events and decisions. A global context is developing with the breakdown of national boundaries, the creation of global markets, the emergence of world concern through local involvement. The demise of any attempt at rational policymaking is also developing.

(v) VIOLENCE IN THE POSTMODERN SOCIETY

Although South Africa is a country with a specific history of violence, violence is also a postmodern world problem. The postmodern society is characterized by violence, which forms part of our daily lives. People do not only encounter violence in their daily lives, but also in movies, on television, in literature and popular songs. This is exacerbated by the ready availability of drugs and weapons and has become an issue of immediate concern to South Africans and the whole world. As the news media detail the increasing amount of violence in the society, we respond with horror, but also in fear for our safety. It claims thousands of lives and annually costs millions of rands in medical care and loss of salaries.

3.3 PROFILE AND CHARACTERISTICS OF THE POSTMODERN LEARNING ENVIRONMENT

Postmodern curricuralists believe that a transformational curriculum is needed for the postmodern learning environment. A transformative curriculum model is not the measured model characterized by rote learning, but a model that changes personal structures and ways of looking and dealing with the world. It is a model where the learner gets the opportunity to develop *understanding*. In this way curriculum is viewed as a passage of personal transformation.

The following transformational characteristics of the postmodern learning environment will be discussed. They are the democratic and dialogic learning environment, development of

the learners autobiographical information, hermeneutics and the postmodern learning environment and an active, learner-centred, integrated learning environment.

(i) DEMOCRATIC AND DIALOGIC POSTMODERN LEARNING ENVIRONMENT

When studying the available literature on the changing learning environment in the postmodern era, a striking semblance among different writers are the importance placed on dialogue. It is believed that a transformational curriculum model can be achieved by means of a democratic and dialogic learning environment.

Doll (1993:7) claims the following:

> *This open, interactive, communal conversation is key to a post-modern curriculum; it is the process by which transformation takes place. Such a conversation need not be a screen for a grand meta narrative.*

Rust (1991:614-615) shares Doll's opinion that the story of the pluralistic contemporary postmodern society should be written by a number of narratives and rejects a meta narrative with universal standards. Meta narratives tend to universalize, instead of opening up the world to individuals. Each individual must be engaged in creating an own personal narrative in a democratic and dialogic learning environment.

Wood (1990:108) also reflects the view that the learner should get the opportunity to create an own personal narrative and reasons that it leads to a democratic learning environment. In a democratic learning environment learners are engaged in choices and have control over the most central elements of their school experience. Freedom of choice has the result of a feeling of power, which is needed in constructing an own identity. Educators should assist learners in cultivating the ability to think, take responsibility for own choices made and voice own (personal narrative) opinions. A dialogic and democratic learning environment prepare the learners for a democratic society with a diverse population.

Democracy in the learning environment should teach the learner to be sensitive to gender, racial and political division. Learners should experience that all belong in the society. Everyone counts and has a contribution to make. The issue of subordination creates inequities between different groups and differences in the learning environment and should not be an object of condemnation and oppression. The learning environment should be

linked to democracy as transformative and emancipatory. In a democratic and dialogic learning environment, the teacher and learner engage in respecting values, making insight available and compare notes with each other. In a successful learning environment the relationship between educator and learner change, because the educator is not an authoritarian dictator transferring knowledge. Slattery (1995:173) maintains the existing relations are the first change to take place in the postmodern learning environment. The teacher should develop a positive self-image as sensitive, knowledgeable, working in her or his own sites, interacting with others and learning from them, having something to gain and to offer, not merely applying. Beck (1993:10) feels that teachers that preach, impose and control does not have a postmodern attitude. Learners must be able to say what they think and so acquiring the skills, emotions and habits they need to react honestly. It is important in the democratic and dialogic classroom not to downplay or underestimate the role of the expert and the educator's motivational and facilitating roles. This opinion also reflects the view of Kantor (1990:72) who maintains that teaching and inquiry should respect the interplay between practical and theoretical knowledge.

The music learning environment is par excellence a domain to develop dialogue and democracy between learners and educators through sharing practical and theoretical knowledge. The music educator has attained a wealth of experience and expertise through own performing and music making. The sharing of experience between the learners and the music educator, leads to respect for each other and a democratic and dialogic relationship.

It is important to note that a dialogic learning environment must not lead to schooling being a mere pooling of ignorance. A way to avoid this problem may be done as follows:

- Invite the learners to discuss and share their experience on a specific topic. An example may be jazz singers.
- The next step is to read about and research the topic, by means of observations, interviews, journals, portfolios etcetera to tap the knowledge and opinions of others.
- Lastly to construct biographies or essays with music examples of the jazz singers, which get discussed by their peers.

The educator assesses the essay and determines if intellectual growth and insight have taken place in each individual.

(ii) DEVELOPMENT OF THE LEARNER'S AUTOBIOGRAPHICAL INFORMATION

Closely connected to the democratic and dialogic learning environment, is the autobiographical information of each learner. It is important, because it places the focus on the internal experience of the learner, rather than external objectives. Slattery (1995:57) argues that it should be done through the process of reconceptualization, where the learner develops the ability to move into the past and reconstitutes meaning to direct an own future. Reconseptualization takes place in different stages. Slattery (1995:57) mentions Pinar's concept of four stages of autobiographical reflection, namely:

- ✓ Regressive - The first stage focus on a regressive step into a past educational experience, but with an eye on the present and the next step.
- ✓ Progressive - The second stage is an imagination of a future vision possibility and leads to the next step.
- ✓ Analytic - The third stage is an evaluation of the complexity of the past, present and future and its interrelations.
- ✓ Synthetical - The fourth stage put the three steps together to help inform the present.

By making use of autobiographical reconceptualizing methodologies, the learner is assisted in finding deeper meaning and understanding. It is a concern that the needs of learners are not always catered for in the traditional curriculum model. This occurs because learning content becomes decontextualized, with the result that deeper meaning and learning aren't achieved. Learning has no or little meaning for the learner. The learners abandon interest in learning, complain about boredom and optimum learning cannot take place. Autobiographical information develops the learning process. The learning situation could be improved by means of autobiographical information and so giving learners some divers, but integrated learning experience. Making use of journals, portfolios, creations of aesthetical pieces (prose, poetry, drawings), role-play, dance and inquiring into the changing self, the learner unfolds. The educator cannot remain a-historical, detached, impersonal and focusd on behaviour objectives in a postmodern learning environment.

Einstein experienced similar difficulties as a young man with formal schooling. The problem developed, because his conceptualization of the world was beyond the modern Newtonian

model and world-view of his time. He questioned traditional understanding of time and space. He actually initiated the postmodern notion that time is not linear and chronological. If time is perceived as past, present and future, it removes autobiographical connection with the learner (Slattery 1995:40-41).

The music learning environment provides the learner with opportunities to express autobiographical experiences in every performance - coral singing, individual performances, playing instruments, dances or any creative work or activities. Music activities place the focus on the internal experiences of the learners.

The following is an example of the development of autobiographical information in the music learning environment (Wolverton 1989:32):

- Select the "*Kyrie*" from the "*Coronation Mass* K.317" by Mozart. Explain that the piece of music was composed in Salzburg, probably for the coronation festivities of Leopold II. Archbishop Colloredo preferred dignified music suitable for the use of worshipping in the church. Although the text is formal and humble, Mozart's musical setting is indicative of the festive occasion for which it was used. The predominant emotions expressed is one of exultation.
- Ask learners to describe their feelings when listening to the music.
- Ask learners to remember experiences from their own lives during which they felt exultation. They are asked to share these experiences with the class.

(iii) HERMENEUTICS AND THE POSTMODERN LEARNING ENVIRONMENT

Knowledge in the postmodern paradigm is not so much about universally valid knowledge, but rather a broader view which includes own practical life experience. Adding to the broader view of knowledge. It may be called hermeneutical knowledge.

All teachers know that the same methodology is not always successful with two different classes. The changing emotions of individuals create an unique and perplexing change to every group of learners entering the classroom. Another agent of change is atmospheric change like a rainy day that can change the whole atmosphere of the learning environment. Knowledge to interpret different situations is thus necessary and is called hermeneutics. Slattery (1995:103) explains the phenomenon as follows:

Hermeneutic inquiry is thus concerned with the ambiguous nature of life itself.

The postmodern discourse is interpretative, because of the ambiguity of the human condition and the world. The postmodern educator should be aware of the ambiguous nature of life and therefore approach the learning environment with an understanding of the meaning of text, language, relationships, historical artifacts and schooling.

Hermeneutics are not an invention of the postmodern discourse. It can be traced back to Aristotle. Aristotle named one of his books *Peri Hermenia* and in early Christian communities hermeneutics referred to the interpretation of text to establish normative religious and legal community practices. The Greek god Hermes explained the decisions of the gods to the other gods and mortal humans. Hermes was a trickster and delivered the messages after interpreting it first. The content of the message changed as the circumstances changed (Slattery 1995:105).

It confirms the subjective understanding of knowledge. Postmodernism believes that the curriculum is not an objective, experimental project which attempts to verify hypotheses, but a community of interpreters working so that the curriculum is open to reflection and interpretation. Parker (1997:30-31) describes the reflective educator as someone who focusess on wider issues such as ethics, the rationale of methods used in the learning environment and the curricula, but also on the intimate relationship such as the immediate reality of the classroom practice. The reflective educator is concerned about improving the educational practice, fostering rationality and autonomy of the educator, as well as teaching in a democratic and liberal learning environment. Reflective teaching involves a willingness to engage in self-appraisal, which implies flexibility, rigorous analysis and social welfare.

Slattery (1995:117-118) uses the metaphor of Haggerson and Bownan of a running stream to explain the multiple viewpoints of hermeneutical enquiring. They explain it in the following way:

✓ Rational / theoretical paradigm: The researcher is on the edge of the stream. He makes general observations and predictions about the flow of the water.

✓ Mythological / practical: The researcher gets into the boat and experience the stream.

✓ Evaluation / transformational paradigm: This is an autobiographical method of research where the researcher writes a personal journal to get in touch with the self.

✓ Normative / critical paradigm: The researcher tries to identify all the hidden factors. These factors are the norms by which society function.

An example of hermeneutics is helping the learner to interpret text. In the learning environment the learner should recognise the power of text, as well as its interpretative qualities. For example Giroux (1991:28) mentions Scholes who claims that text should not be treated as a *"sacred vehicle for producing eternal truths"*. In the process of textual study the learner must read, interpret, criticise or reading upon and against text. The reader should identify cultural code that structures an author's work. It helps the student to analyze text within *a "network of relations with other text and institutional practices"*.

(iv) AN ACTIVE, INTEGRATED, LEARNER-CENTRED LEARNING ENVIRONMENT

Postmodern educationalists no longer accept that individual educational experience has necessarily to be governed or determined by rational laws or rules (Van der Walt 1988:194). In the past learners were trained to be passive receivers of knowledge by the dominating culture. Kirkby and Kuykendal (1991:207) maintain that such views of knowledge *"tend to favour linear thinking over recursive; Anglo over African-American, Latino, and Asian; masculine over feminine; rational over intuitive; deductive over inductive; and the teaching of knowledge as a canon, a body of revered text by a collection of sacred writers and thinkers"*. The postmodern paradigm proposes to change the learner into an active agent who creates knowledge. Moll and Slonimsky (1989:161) supports the claim that *despite "diversity among cognitive developmental theories, it is fair to say that activity is a primary category in the investigation of the growth of knowledge in a person"*. The postmodern view of perceiving reality as an own experience has a decisive influence on the learning environment. The emphasis is on the active learner and the learner-centred approach. The multiple vision of reality means that educators must give the learner the opportunity to expiore various interpretations, positions and procedures to one problem. With the postmodern conceptualization of knowledge and reality as an own personal narrative and an own personal experience, there is no correct or incorrect way of experiencing, but only an honest way. This view is a complete deviation from the rational scientific model of learning. Van der Walt (1988:191) quotes Smith who claims that with the postmodern view of knowledge and reality, empiricism is again important for the learning environment:

The real world has regained its importance. Academic understanding lost some of its meaning to learning through experience (translated).

The learner must be assisted in creating or constructing and controlling own knowledge and learning. Different activities are done through interaction with peers and by solving given problems, to help learners to think critically. Critically thinking is a way to assist learners to be able to deal with the postmodern world and to realize that old knowledge is not enough to solve current and future problems. The educator and learner explore problems together. They make up their own problems, not using a text book. They reflect on the nature of the problem, the meaning, how it can be interpreted and they develop own variations of the problem. Two examples of such activities are the following:

- In the literature class learners are encouraged and trained to explore text (deconstruct) with all the richness of the different meanings of the text.

- With the emphasis on performing in the music learning environment, analyzing, evaluating and judging performances, develop critical thinking.

Kirkby and Kuykendal (1991:27) emphasize the importance of cooperative learning in the twenty-first century where problems are too complex for solo solutions as *"collaborative thinking is today's reality as well as tomorrows hope"*. Kirkby and Kuykendal (1991:27) quote Sternberg who believes that learners should be taught to think for themselves, to be independent problem solvers, but they must also learn to be group problem solvers. Kirkby and Kuykendal (1991:29) warn that feelings of competition among learners are inimical to cooperative learning. Learners should not come to school with the inclination to compete, but rather to collaborate.

The following strategies (Jensen 1995:187-188) can be used to design an active learner-centred learning environment, by using various strategies and instruments (table 2.1).

A nurturing climate is crucial for intellectual development. It must be a warm, vibrant, trusting environment that encourages learners not just to soak up information, but to ponder and wonder and take risks (Kirkby and Kuykendal 1991:23).

Kirkby and Kuykendal (1991:36) quote Glasser's findings that students *tune out* when they

are not actively involved. The essence for intellectual development is to get the learners involved with stimulating challenges. Learners do not mind working hard, but they do mind being bored by rote learning, low-quality tasks which do not engage them fully. The best tasks leave plenty of room for choice by individual learners to capitalize on their own type of intelligence and thinking styles.

Table 2.1 Strategies for an active learner-centred learning environment

Music	Sculpture
Spiral learning - Come back with more depth	Debates
Storey telling	Personal quests/personal life - trace the history
Peer teaching	Presentations
Model making	Mind-mapping
Performance	Game design
Reflection Myths	Montage/collage
Integrative themes	Open discussions
Reporter interviews	Physical activities
Drawing	Multi-status - from more points of view
Journals	Apprenticeships

The postmodern learning environment is learner-centred. It can be summarized by Steyn and Hay (1999:124) as follows:

✓ Learners take control of their own learning, which leads to learner-centred and activity-centred approaches. The teacher is no longer the centre of activity, but the learner becomes the focal point. The teacher and learner are both in control, because learning is a process of negotiation, coordination and performance.

✓ Assessment is viewed as a process where learners *learn* the truth about themselves.

✓ Group activities are ideally suited to achieve these goals.

✓ Learning can hardly happen without learning content and resources. Such content need not be final and dominated by the teacher.

✓ The teacher takes a multiplicity role as manager or facilitator. The learning environment is an interactive process of negotiation, coordination and performance. The learning process is not preplanned, orderly and logical, but dialogic in the context of the learning situation.

The learner-centred approach leads according to Parker (1997:148) to a more assertive, robust, creative disposition. The postmodern learner's involvement puts him in control of the text (perceived as everything), to dismantle, to refashion, to reflect, to change etcetera. It gives the learner a weapon to empowerment, because knowledge can be controlled, and manipulated. It gives the learner the opportunity to reconceptualize his or her claim to knowledge.

3.4 GENERAL IMPLICATIONS FOR THE LEARNING ENVIRONMENT

Postmodern curricularists are in agreement that the implications for a paradigm change are enormous. It will not only affect society, but also the learning environment. It is not always clear what the change will entail, but there is agreement on a transformational curriculum. Postmodern reality is not simple and uniform as previously believed, but **complex** and multiple. The postmodern learner is part of the technology, visual and violent society with a diverse population. An educational model to fit this reality is necessary. A model suited for the postmodern conditions that a learner develops and grows up in, will have to be a transformative curriculum model. Doll (1993:3) believes that a new sense of educational order will emerge. The linear, sequential, easily quantifiable ordering system with a clear beginning and end, dominating education today, will be replaced by a more complex, pluralistic, unpredictable system. The system will always be in progress or transition. The control elements in the modernist curriculum model will become less ordered and controlled. It can be called a transformational curriculum.

The other important change will be the new **relation** between educator and learner. The educator will no any longer transfer knowledge to the student, but there will be an interacting and a mutual exploration of relevant issues. Aasen (1993:4-8) believes that educators are already dealing with the consequences of the new conception of knowledge. He explains that it leads to a different cultural concept of authority. Society in the past allowed schools to have

authority, but at present the cultural background does not support authority anymore. Authority in the past came from the knowledge that was imparted and perceived as absolute and necessary for man's future existence in society. At present, knowledge is easily available and assessable. Aasen (1993:7) clarifies the position as follows:

> *From being a relation of exchange, where students subjected themselves to some authority to acquire information which would increase their value on the labour market, the relation between teachers and students has increasingly become a moral relationship. Today the relationship between teachers and students is based on moral obligation.*

He feels that the attitude of society is leading to discipline problems in the learning environment. Educators are concerned about the increasing disciplinarian problems and the loss of authority and respect from the learners.

Postmodernism has numerous implications for the creation of an identity. Aasen (1993:12) mentions three elements which have an influence on the personhood of the learner. These elements are reflexivity, everything is malleable and individualization. The learner, from an early age, is in touch with own inner feelings. Postmodern learners comment on themselves with a phrase like *"I am not motivated today"*. They know what they want and it seems to parents and educators as if they know everything already. Educators must recognize the reality of the world the learner lives in where everything has already been discovered and where the media unveils the secrets of adulthood. Young people meet life with a completed manuscript, who apparently cope with life without a problem. What parents and educators must realise is that their problem is not a lack of knowledge, but the anxiety to live up to the manuscript. Everything is malleable and the child has to perform in the ever-changing world. Identity must be recreated and is not just taken over. The problem is that life can become a series of crises where feelings of self-confidence are replaced by feelings of inferiority, emptiness and can lead to freedom but loneliness.

The postmodern culture does not emphasize moral values, but psychological values. The stress is on self-confidence, acceptance of self, senses of belonging and initiative in a constant changing world. The challenge for the learning environment is when previous stable patterns, such as traditions, patterns of meaning, beliefs and morals disappear. Cultural liberation influences all age groups, but it has a greater unsettling influence on the young people who has never known previous stability. The postmodern world is a wonderful world

with wonderful promises like personal transformation, power, pleasure, personal development, but also threatening with destruction (Aasen 1993:11-12).

In the past school was built on a basis for motivation and self-discipline. These values have lost their importance in the postmodern world. Values linked with the delaying of satisfaction and curtailing desire has diminished. We live in a consumer community with a pleasure principle or instant gratification of desires, lust, happiness, absence of repression. Aasen (1993:7-8) mentions the emphasis on the young people's world. The focus is on the young people and the adults try to find themselves in the young people's world. Youth emerges as the ideal for human existence. Youth fashions and the relations of young people become the norm. This cannot avoid affecting the learning environment and result in educators and parents losing their authority, but on the other hand equally without experience in the fast-moving world.

The visual reality learners experience every day influence the way the learner perceives himself or herself. This perception of the self is anchored in the media or visual representation of love, desire, youth and beauty. The problem with this perception is that popular culture can never deliver what it promises. Denzin (1991:152) lists several personal postmodern troubles that flow from this perception. The educators should take note of the existence of the following, namely homelessness, aids, racism, sexism, drug addiction, abortion and child and sexual abuse.

Critical studies alert us to the effect these complex social and cultural concerns have on the learning environment. The modern school system was structured for modern purposes. The schools served as universalized institutions, promoting unifying ideals and fostering notions of nationalism and civic pride. Postmodern education raises serious questions about such objectives. Schools must address the interest of subcultures and global tendencies. He points out that deconstruction manifests itself in the learning situation through parent associations and student rights groups demanding participation in school management and being part of the decision making process (Rust 1991:617-619).

The learning environment reflects the wider cultural contradictions and crises of a society. Wallace (1994:2) recorded the following implications of violence at home or the community on the development of social and academic growth in the child:

✓ Children traumatized by violence can have distorted memories and their cognitive

functions can be compromised.

- ✓ Children that have been victimized by or who have seen others victimized may develop social problems. They experience anger which is likely to be installed into their personality structure.

- ✓ Carrying an extra load of anger makes it difficult for them to control their anger which resorts to violent actions.

- ✓ Children cannot learn nonaggressive ways of interacting with other people, because their role models, including those in the media, use physical force to solve problems.

- ✓ Children living in violent environments repress their feelings. They become emotionally insensitive to others and careless with their own lives.

- ✓ Children being traumatized by violence may have difficulty seeing themselves in future meaningful roles. They have a hard time concentrating on learning at school.

- ✓ Children need to feel they can direct some part of their lives, but children who live with violence learn they have very little say in their lives, which leaves a feeling of helplessness.

- ✓ When children are under continual stress, they are in danger of remaining psychologically in an earlier stage of development.

To clarify the conceptual differences between the modern and postmodern era, the information is presented in a table format as follows (table 2.2)

4. THE NEEDS OF THE PRIMARY SCHOOL LEARNER IN A POSTMODERN LEARNING ENVIRONMENT

Crisis is not only part of the society we live in, but the learning environment also suffers from it. The recognition of crisis in schooling is virtually unanimous according to Slattery (1995:20):

Table 2.2 Comparing the modern and postmodern paradigm

Modern Paradigm	Postmodern Paradigm
Knowledge Objective scientific knowledge is the core of all knowledge. It gave way to unheard of control. Educators are transmitters of authoritative, unbiased knowledge, to learners without any knowledge. The curriculum is divided into separate subjects. The natural science divides reality in manageable compartments. Curriculum content leads to encapsulation.	**Knowledge** Educators and learners are co-constructors of knowledge. Knowledge is seen as intimate and subjective. Although the curriculum varies from locality to locality, the following universal contemporary issues must be dealt with: career choice, creation of values, war and peace, nuclear age, ethics, sexual revolution, stereotyping violence, technology, free speech and censorship, and deception of corporate advertising.
Value The learner should be trained in universal values. Education should be *value-neutral*. The most important values are rationality and progress.	**Value** Education should assist learners to construct diverse and personally useful values of their cultures. Values are not *true* or *right* in any universal sense. Important values are: diversity, tolerance, freedom, creativity, emotions.
Culture A hidden curriculum persists with ideas that is obscured. This is an important instrument used by societies to reproduce their respective cultures from generation to generation. Culture is something pupils must learn about, but can also be a barrier to learning. Learners from diverse cultures must be trained in a shared language or medium of communication, before educators can transmit knowledge to them.	**Culture** All cultures are of equal value and constitute equally important realities. Minority students must be empowered to fight against Euro centric enculturation.
Personhood Human nature is stable and the self can be objectively known. Because of the stable nature of the human, they are tested eg. IQ tests. By giving a learner mastery over subject matter the teacher is enhancing the self-esteem. Educationalists help the individual to discover their identities.	**Personhood** Learners have no true self or innate essence. Selves are social-construct. Self-esteem is a pre-condition for learning. Education is a type of therapy. Education help learners to construct their own identities and not discover it. Society and people are empowered when they attain their own chosen goals.
System A closed system with universal laws. Education is an event or a process with principles such as: order, objectivity, is measurable and cause-effect. The classroom forms an enclosed space where a hierarchal, linier subject-object relations exist between the educator and learner. The educator has all the authority. The implication is that the pupil develops a subject-object relationship towards reality. The learner is separated from reality.	**System** An open system with no universally valid law from which the overall behaviour of the system can be deduced. The classroom is a destabilizing and self-organizing environment. The classroom is not a place of orderly progress (assembly line) in a neat and tidy setting. Education is a complex process of engaging, experiencing, choosing and acting. Dialogue and transformation is part of the system. The educator has an inviting relationship where the learner is invited to take part in the dialogue of creating new meaning. The educator and learner are both parts of the meaning-making process. Dialogue is the heart of a curriculum giving it authenticity.

> *The postmodern worldview allows educators to envision a way out of turmoil of contemporary schooling that too often is characterized by violence, bureaucratic gridlock, curricular stagnation, depersonalizing evaluation, political conflict, economic crises, decaying infrastructure, emotional fatigue, demoralization of person, and hopelessness.*

These examples, which Slattery confronts us with is a reflection of our inability as adults to create an environment wherein the learner can become the adult of tomorrow. Education in the postmodern society must therefore extend a **therapeutic attitude**. Educators with a therapeutic attitude can develop the type of nurturing understanding environment to establish trust and rapport with learners. It can act as an antidote to frustration and aggression and offer an environment conducive to learning.

The postmodern learner has specific needs, which the learning environment must recognize:

(i) ACTIVE INVOLVEMENT IN OWN LEARNING

Most learners are bored, uninterested and unmotivated by the non-relevant teaching methods and content of the modern learning environment. The postmodern learners need a transformational curriculum based on understanding. Understanding develops with active construction of own knowledge and a learner-centred approach (chapter 2, section 5.3 & 3.3). The music learning environment provides active participation and the construction of own knowledge.

(ii) INTERACTING RELATIONSHIP BETWEEN EDUCATOR AND LEARNER

The transformational curriculum of the postmodern learning environment calls for a different relationship between the learner and the educator - mutual interacting, not passive learners receiving knowledge from the educator.

(iii) THERAPEUTIC LEARNING ENVIRONMENT

The postmodern learners' reality has changed enormously in the past decades. Being an ever-changing world, it is very exiting and creative, but also stressful and causes anxiety in learners. Nothing is stable or stays the same for very long and learners need security to grow intellectually and emotionally. The learning environment must provide a shelter of

calmness and understanding. Music therapy can play an important role in providing the relaxing environment in the stressful circumstances (chapter 3, section 3.5).

(iv) DIALOGIC AND DEMOCRATIC LEARNING ENVIRONMENT

The postmodern learning environment must change to a dialogic and democratic environment, because the postmodern learner has the need to air own views and opinions. It has been mentioned in the study that the learners must be considered in choices of learning material, as well as opinions about relevant affairs (chapter 2, section 3.3).

(v) RECOGNITION OF DIVERSITY

It has been discussed in chapter 2, section 3.2.2 & 3.3 that the postmodern society and postmodern learning environment recognize the diversity of all people. The importance of recognizing the diversity of people has also been stressed in the policy documents of Curriculum 2005. The need exists in every learner to be accepted, and it is the task of the educators to develop the potential of each learner.

(vi) EMOTIONAL STABILITY, SECURITY AND SAFETY

Many learners in South Africa live in a society full of violence, anger and frustration. It leads to feelings of helplessness, which threaten intellectual and personal growth. Violence is one of the factors which cause an unstable world filled with anxiety and stress. Anger and frustration should be dealt with by teaching nonaggressive behaviour (chapter 2, section 3.2.2).

Stable family patterns are fast disappearing in the postmodern society. It is the responsibility of the school to assist the learner in the need to self-acceptance by developing self-understanding and self-confidence. The role of the media is damaging in the building of a positive self-concept. The learner acquirers the impression from the media that only the perfect body is acceptable. The music learning environment has the innate potential to deal with these emotional issues.

Although the postmodern learner lives in a sophisticated visual world of shopping malls, television, film and computer, the personal need of security still exists. The learners need the security of a healthy relationship with parents and educators. It should be a relationship

of respect, of discipline, of understanding and love from adults and educators. Learners do not want to be controlled, but need understanding in this complex world.

5. DEVELOPING OF LEARNING POTENTIAL IN THE SOUTH AFRICAN LEARNING ENVIRONMENT: A POSTMODERN PERSPECTIVE

5.1 INTRODUCTION

Educationalists and psychologists hold different views and have developed different cognitive models of learning. Woolfolk (1980:282) defines cognitive learning as the human mind's active attempts to make sense of the world. The way people think about situations, along with beliefs, expectations and feelings, influence what and how they learn. Knowledge is the outcome of learning and the power of knowledge is the driving element in learning. Two cognitive models of learning, which lead to the developing of learning potential, will be discussed in this section of the study. The two models are: Gardner's multiple intelligence theory (MI theory) and Herrmann's four-quadrant whole brain model. These two models propose a postmodern view on learning. They are models of intellectual and personal transformation and the construction of own knowledge. These models have the potential to transform the South African learning environment into a twenty-first century postmodern learning environment, by making the learner aware of own learning potential through utilizing brain potential.

Byzan (1991:20) mentions that in the brain there has a minimum of 1 000 000 000 000 individual neurons and each of the neurons can interact with one to a hundred thousand other neurons in different permutations. A Russian scientist worked out that the number of connections that one brain cell could make, would be more than ten and a half million kilometres in length, if written out. The potential of the human brain is enormous. This makes brain-based learning the path of the twenty-first century:

> *What we are gathering from our efforts at the moment is knowledge that the mind is infinitely more subtle than we had previously thought and that everyone who has what is ironically called a "normal" mind has a much larger ability and potential than was previously believed* (Byzan 1991:16).

A transformational curriculum for the South African learning environment where learners construct own knowledge will be discussed. This will be followed by exploring the two cognitive models of learning.

5.2 A TRANSFORMATIONAL CURRICULUM MODEL FOR SOUTH AFRICA

The traditional modern curriculum approach in South Africa, and all over the world, was to develop academically competent learners. The educator transferred pre-chosen academic subject content and learners were measured through tests and examination. It was an acceptable curriculum for the modern world in which the learners had to learn, but with the current paradigmatic change to a postmodern world, the abilities of the learners need to be developed to become competent future citizens. Doll (1993:59) argues that past and recent curriculum discourse has not paid attention to the complexity of the human mind. The potential and qualities human beings possess, have been downplayed or neglected. What the learner needs, is to develop learning potential through the use of a transformational curriculum model. Van der Horst and McDonald (1997:19) defines a transformational curriculum as *a "collaborative, flexible, trans-disciplinary, outcomes-based schooling system which is orientated towards empowering learners"*. Transformational outcomes-based education (OBE) focusess on future orientated, visionary, optimistic people interested in growth and success. It is about learners *becoming* and acquiring insight and is achieved through activities that develop or transform the abilities of the learner. Spady (1994: 63-66) explains a transformational curriculum by means of a metaphoric mountain. The top of the *Demonstration Mountain* is the complex form of learning outcomes which people face in reality. These complex forms of learning outcomes are called role performers or sometimes transformational outcomes and involve tasks like effective communication, investigative research, complex analysis, problem solving and decision making. These abilities that go beyond knowledge and skills.

Duckett (2000:1-2) and Van der Horst and McDonald (1997:20) list the following as a transformational outcomes-based curriculum:

- ✓ Defined by outcomes (school programmes, processes, credentialing and decision-making priorities).
- ✓ Expanded opportunities (it enables successful teaching and learning for all and goes beyond seat time as learning).

- ✓ Based on the success of performance outcomes (credit through accomplishment, using clear criteria, demonstrating success of priority outcomes, what learners should be able to know and do).

- ✓ Aided by instructional coaching (fostering successful performance for all learners on essential outcomes. Learners receive guidance by means of feedback and explanation).

- ✓ Integration of concepts (cross-curricular approaches to outcomes, curriculum structure, in structural delivery and assessment).

- ✓ Based on culminating achievement (end result approach to outcomes, curriculum design, instruction).

- ✓ Orientated to inclusive success (all can and must progress according to individual ability. Structure of curriculum cross-groupings, learning, assessment and credentialing opportunities).

- ✓ Characterised by cooperative learning (working together such as in group discussions and projects, to foster learning success for all).

- ✓ Confirmed by criterion validation (expectations or high-level performance on clearly defined outcomes and standards).

- ✓ Formed on collaborative structures (for curriculum planning, instructional delivery and learner learning).

It is interesting to note that human potential and the development of human potential actually are a modernistic vision. The concept was never fully developed and explored in the modern era. The Enlightenment had the vision that improvement, progress and betterment for all would come through technology and right reason. It is therefore important to rectify the problem in the postmodern learning environment by not only developing the human potential, but also including learning potential. There is a great need in South Africa to adopt a curriculum model to bring about insight and understanding in the complex postmodern world the learner has to learn in. Slabbert (1996:109) agrees that human potential has been grossly neglected in the past. The focus had been placed on the product and not on the

process (the how) of learning. Van der Horst and McDonald (1997:20) views transformational OBE as future orientated where learners become involved citizens by contributing to their own lives. Learners become self-directed towards achieving goals based on positive values and will become critical thinkers who solve problems.

Malcolm (Jansen1999:86) alerts South African educators that the word *transformational* has a different meaning for South Africans. In South Africa transformation is a goal for society moving away from apartheid, and *"transformational OBE might not be the route to the transformation that South Africa dreams off"*. South Africa needs to develop the learning potential of each learner to reach transformational outcomes.

5.3 CONSTRUCTION OF LEARNING IN A SOUTH AFRICAN POSTMODERN PARADIGM

South Africa currently faces a complex academic position, which was inherited from the previous apartheid government as well as the Western Science Paradigm. Most of the learners in the country received an education with a primitive form of cognitive activity, which mainly consisted of rote learning and reproducing of knowledge. Von Glasersfeld (1995:181) feels that training, memorization and practice are not "*useless, but rote learning does not lead to what Kant called 'Enlightenment' or understanding*". In the postmodern learning environment it becomes increasingly important to be creative with knowledge, to create own knowledge and to be able to think in an abstract way. The problem according to Moll and Slomimsky (1989:160) is that those learning problems clearly have a history of social context. It is not a solution to make performance better or faster or stronger by determining whether a learner has the *requisite behaviour skill*, but educators have to tackle the real development or genetic question of the construction of learning in learners.

(i) DETERMINANTS IN THE CONSTRUCTION AND TRANSFORMATION OF LEARNING

Educators need to understand what determines the construction and transformation of learning in the learner. Moll and Slonimsky (1989:163) explain that cognitive developmental theories in general accept that a crucial developmental transformation in any human being is that from concrete forms of cognition to abstract forms of cognition. This transformation is structural and represents a developmental transition in which the cognitive structures of abstraction arise out of the less sophisticated structures of concrete thought. Moll and

Slonimsky (1989:163) quote Piaget who holds the view that formal operational thought (abstract thought which is characterized by operations such as identity, negation, reciprocity and correlation) is the pinnacle of human cognition and comes about as a consequence of the structures of concrete operational thought. It is recognised that socio-cultural conditions can inhibit optimum cognitive growth. Another example is Moll and Slonimsky (1989:163) who quote the argument of Bruner that the symbolic mode representation (analogous to abstract thought), arises developmentally out of the iconic (analogous to concrete thought). Lastly it is necessary to understand Vygotsky's notion that abstract cognition comes about in the communication of the learner with adults in the objective relation among objects, tools and language which have been laid down in the course of social history (Moll and Slonimsky 1989:164).

(ii) VYGOTSKY'S MODEL OF CONSTRUCTION OF KNOWLEDGE

Harvard (1999:38) states that Vygotsky has been referred to as *The Mozart* of psychology. He earned the title in recognition of his originality as a thinker, his untimely death at thirty-eight and his influence on others. When studying Vygotsky's theory of learning a complex transformation of human growth becomes visible. Human activity transforms both human nature and society. A central theme in Vygotsky's theory of learning is that a child's development cannot be understood without examining the external social world. The first element of Vygotsky's theory under discussion is the social construction of knowledge.

Vygotsky (1978:30 & 25) claims that from the first day of a child's development his activities acquire a meaning of its own in a system of social behaviour and is directed towards a definite purpose: *"The path from object to child and from child to object passes through another person"*. But before mastering his own behaviour, he masters his surroundings with the help of speech. This process produces new relations with the environment in addition to the organizing of behaviour itself. These unique forms of behaviour later produces the intellect and becomes the basis for productive work. Vygotsky believed that a child's intellectual growth is determined by the intellectual climate of his environment. Boeyens (1989:6 & 14-15) clarifies Vygotsky's theory by explaining that a child's interaction with his parents facilitates a higher organisation of thought. Through communication with parents the child learns language and language contributes to reflecting on own thoughts, with the result of developing a higher degree of cognitive development through the process of internalization. Vygotsky does not agree with Piaget that it is a process of biological maturation, but the quality of learning opportunities results in cognitive development. The

individual benefits from instruction and the current ability of the individual assumes secondary importance. Human intelligence or abilities are not predetermined, but influenced by the environment. Vygotsky goes so far as to say that the learning brought about by the child's social experience is a prerequisite for mental development.

A second theme of Vygotsky's theory is the capacity for self-regulation. Through repeated experience, children learn mentally to plan their actions. They also make use of the assistance of other persons according to the requirements of the problem (Vygotsky 1978:29). The child learns to master and control own behaviour. When the child begins to use language not only to communicate, but to monitor activities, a vital developmental point is reached. The child is at first regulated by other people to organize the strategic aspects of tasks, but takes over the regulating function to become self-regulatory. The child reaches a level of development which he or she cannot reach on his or her own (Harvard 1999:39).

Two further keys to Vygotsky's theory are internalization and mediation. Vygotsky (1978:26) explains that children solve practical tasks with the help of speech, eyes and hands. The unity of perception, speech and action produce internalization. It is a transformation from an interpersonal to an intrapersonal process.

> *We call the internal reconstruction of an external operation internalization* (Vygotsky 1978:56).

Mediation refers to the role that tools, language and other symbols of culture can play in learning and internalization.

The concept of the zone of proximal development (ZPD) has turned out to be Vygotsky's most influential idea to education. To Vygotsky (1978:73) development is not a slow accumulation of unitary changes, but a complex dialectical process characterized by periodicity, unevenness in the development of certain functions, qualitative transformation and intertwining of external and internal factors. Vygotsky adopted a different approach to assessing intelligence. Vygotsky (1978:89) claims that formerly it was believed that tests determine the mental development level with which education should reckon and the limits that it should not exceed. But *"this procedure orientated learning towards yesterday's development, towards developmental stages already completed"*. Vygotsky (Boeyens 1989:16-18) holds a postmodern view of human beings as open systems that are able to change and learn. To determine a child's learning potential the actual developmental level

that the child has reached (IQ tests) as well as the *potential developmental level* should be taken into account. The difference between these two levels is called the *zone of proximal development* (ZPD). Moll and Slonimsky (1989:164) explain the existence of ZPD as the distance between the actual developmental level as defined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. The ZPD is an indication of the improvement in ability that is demonstrated after intervention and the development of the learner's potential.

It can therefore be argued that the developmental theories provide the educator with an account of developmental patterns and the necessity of the mobilising of particular cognitive skills which are required to deal with abstract problems. The South African learning environment should be guided to assist the learners to become abstract thinkers and develop potential. Boeyens (1989:20) claims:

> *It can therefore be postulated that if an individual is exposed to an enriched environment the extent to which he will be able to benefit from this exposure will be determined by the size of his ZPD.*

5.4 A CONSTRUCTIVIST POSTMODERN LEARNING ENVIRONMENT

(i) TYPES OF CONSTRUCTIVISM

There is more than one constructivist theory of learning. Woolfolk (1980:277-79) quotes the categories of Moshman, namely exogenous constructivism, endogenous constructivism and dialectical constructivism.

Exogenous constructivism focusess on *"the ways that individuals reconstruct outside reality by building accurate mental representations such as propositional networks, schemata, and condition-action production rules"*. Direct teaching, feedback and explanation affect learning. It assumes that knowledge is accurate and that it reflects the outside world as it really is. Information processing is an example of exogenous constructivism. An information processing perspective implies that the human mind is regarded as a symbol-processing system that converts sensory input into symbol structures (images or schemata) and then process those symbol structures so that knowledge can be held in memory and retrieved. Learning takes place when the internal symbol structure gets modified during input from the

outside world, but the important work is what occurs inside the head (Woolfolk 1980:277).

Endogenous constructivism assumes that *"new knowledge is abstracted from old knowledge and is not shaped by accurately mapping the outside world"*. Knowledge is not a mirror of the outside world. Piaget's theory of cognitive development is an example of an endogenous constructivist theory. Exploring and discovery is more important than teaching.

Dialectical constructivism believes that knowledge grows from interaction of internal (cognitive) and external (environmental and social factors). Knowledge reflects a filtered outside world, through culture, language, beliefs, interaction with others, direct teaching and modelling. Vygotsky holds this opinion, which can also be called situational learning.

Von Glasersfeld (1995:19 & 191) has a radical constructivist view, so called because it entails a rebuilding of the concepts of knowledge, truth, communication and understanding. Radical constructivists believe that although meaning and knowledge are socially constructed it is still a subjective construction, and therefore a radical construction.

There are also extreme constructivist perspectives which assume that the world is not knowable. What is true in one time and place becomes false in another time and place. They are not concerned with *true* representations of the world, but *useful* constructions. After classifying the different types of constructivism, the view of past educators on constructivism follows.

(ii) CONSTRUCTIVIST VIEWS OF LEARNING

The importance of recognizing the value of a constructivist learning approach is clear when different opinions of educators, philosophers and psychologists are explored. Jean-Jacques Rousseau (1762/1957) felt that the classical education of his time, which consisted of reading and memorizing, caused the learners to be passive, destructful, deceitful, selfish and stupid. He argued that education is boring and that the learner does not really learn. Dewey (1931/1970) objected against the content and methods of classical teaching, because it does not involve problem solving or reflective thinking. Bruner (1961) rejects the *"teacher-as-dispenser"* model of traditional education. Later, Freire (1974) described traditional education as an approach where there is no room for learner dialogue, so Sharan (1985) developed the cooperative learning programme where there is no teacher domination (Marlow and Page 1998:13-16).

Marlow and Page (1998:16-19) elaborate by explaining that active learning expand the brain and although these educators, philosophers and psychologists express their theories of learning in different terms, they all agree that learners learn more if they are actively involved in their own learning. By investigating, creating, discovering and interacting with the environment the learners build their own knowledge structures which lead to the very important critically thinking. The learners learn content and process at the same time. Piaget's contribution to this direction cannot be over-emphasized. According to Piaget learners construct there own knowledge *schemata* (knowledge structures/constructs and ways of perceiving, understanding and thinking about the world) and mental development (learning) is a process of equilibrium in response to external stimuli. Complementary components of the external world gets assimilated into the current cognitive structures or schemata. Existing knowledge structures or schemata will be altered to accommodate new experiences that do not fit into existing knowledge schemata. The process of assimilation and accommodation create equilibrium. The implication is that learners need to construct own knowledge for knowledge to be meaningful. Two other opinions are that of Bruner's theory which is based on discovery for really true learning to take place and Sharon feels that learners learn best through problem solving.

(iii) THE CONSTRUCTIVIST LEARNING ENVIRONMENT

The postmodern learning environment is characterized by diversity. Learners from different cultures, abilities, needs and interests provide a challenge to education. The learning environment in South Africa has changed drastically in the last years since the beginning of a democratic dispensation for the people of South Africa. The diversity of the learning environment has aspired to an education system for the country to accommodate the diversity of the learners. Educators are concerned with how to meet the needs of the learners in a diverse society. The value of constructivism is that it respects and allows each learner to use own knowledge and experience in the learning process to achieve transformation and understanding. Windschitl (1999:752) agrees that background knowledge has a profound effect on how learners interpret subject-matter and that learners learn best when they use their own knowledge to solve authentic problems in striving for deep understanding.

In a postmodern world where the focus is not on knowledge being transmitted, but transformation of learning through the intellectual activity of the learner, the constructivist learning approach is a challenge to accommodate the postmodern view on knowledge. Marlow and Page (1998:ix) support constructive learning as an active learning programme,

because it promotes elaborate knowledge construction, which encourages independent thinking and in-depth understanding. Constructivism means that the learner creates own knowledge:

> *.....learning means constructing, creating, inventing, and developing our own knowledge* (Marlow and Page 1998:10).

In the constructivistic learning environment learners acquire information from different resources, such as books, magazines, pamphlets, videos, CD-ROMS etcetera to develop an understanding of the problem they negotiated with the educator and which they are going to solve. Receiving information or hearing it, does not mean that learning has taken place. Learning in constructivist terms is the process and the result of questioning, interpreting and analyzing information. It is problem-based learning. The learners are involved in dialogue with the educator, but also make and share meaning with their peers. As the information and thinking process develops, learners alter own meaning and as a result, understanding of concepts develops. The information gets integrated with past experiences and current knowledge on the subject. Marlow and Page (1998:25) reiterate that in learning programmes where learners construct own knowledge, critical independent thinking, deeper understanding of concepts and longer lasting learning take place. It leads to a different approach to assessment.

Windschitl (1999:754) confirms that there is a need for forms of assessment that gives the learner the opportunity to demonstrate what has been learnt and meet rigorous criteria of excellence. Learners are required to produce journals, research reports, physical models, performances, debates or artistic representations. The criteria for assessment will have to demonstrate that the learning outcome reflects the efficacy of the educator as a promoter of understanding. The learners will still have to demonstrate an understanding of key principles and concepts as well as critical thinking that are assessed on standard tests.

(iv) A PROFILE OF THE CONSTRUCTIVIST LEARNING ENVIRONMENT, EDUCATOR AND LEARNER

Becoming a constructivist educator requires a change in attitude about how learners learn, and the different roles of educators and learners. Personal philosophies about constructivism furnish underlying principles to justify choices. Table 2.3 supplies the educator with a checklist in a constructivist learning environment.

Table 2.3 List of constructivist elements in the learning environment

Learning environment language	**Communication**	**Roles, activities and management**
Co-operation Discover Explore Learn Learning experience Learning programme Learning task Facilitator Research Dialogue Choice Initiative Transform Create Activity Reflection **A physical classroom** The classroom walls are filled with the learner's work. The furniture is moved around to accommodate the specific activity which is often group work. The physical layout is of such a nature that the educator can get everyone's attention when needed. Learners plan the layout of the classroom with the educator. **Assessment** Meta learning takes place as learners construct a relationship with the content and own learning. Learners create assessment tools and criteria with the educator. Learners believe assessment is an opportunity to learn. Educators must develop own ability to analyze problems which are not meaningless, complex enough, require critical thinking with the standards and principles necessary.	Learners are actively involved with own projects and are not passive listeners. Educators communicate through questions, but with no single-word answers. Learners communicate through dialogue with an educator. Learners' voices are heard as they ask questions and assist each other. All participating in the learning experience use normal voice, although the learning environment is noisier than the traditional learning environment. **Motivation** Threads of punishment are avoided. Promising rewards are avoided. Learners realize that they are responsible for own learning. Learners are disappointed when an activity or period ends. Learners stay after class to discuss their work. Learners leave the classroom, discussing the work. Learners are rarely absent Learners look forward to the learning activities. The classroom is viewed as *our* classroom.	It places a high demand on the educator's subject-matter understanding. The educator must be aware of the principles underlying a topic of study and the variety of ways in which the topic can be explored. The educator must be aware of the *correctness* of the learner's construction of knowledge. Educators encourage learners to find answers to their questions. The educators have to use pedagogical skill to complement rather than dominate learners' thinking. Strategies such as scaffolding (reducing complexity), modelling (think aloud how to approach a problem), coaching, guiding and advising. Learners have the role to make decisions and negotiate a problem to be solved which reflect their interest and abilities. Everyone is involved in the management and routine of the class. Behaviour concerns and problems are opportunities to discuss, solve problems.

5.5 MULTIPLE INTELLIGENCE AS A POSTMODERN COGNITIVE MODEL FOR DEVELOPING LEARNING POTENTIAL

5.5.1 INTRODUCTION

At the turn of the century Binet (1904), a gifted psychologist, received a request from the educational authorities of France to develop an intelligence test. Some primary school learners were experiencing great difficulties with their scholastic assignments and help was needed in identifying these problematic learners, at an early point, to determine who will need special teaching. A process was set into action that soon proceeded in a very different way. By the 1920s and 1930s intelligence tests became established in America and the English-speaking world. Although many of these tests were well motivated, the tests often came to stigmatize, label and make judgements about limitations of people.

The intelligence test went hand in hand with the belief that intellectual strengths were largely inherited, that IQ tapped an inviolable feature of an individual and that intelligence is measurable (Gardner 1993:216-217). Bender (1992:119) agrees that the principle was accepted that all differences between people are measurable. One person can have *more* or *less* of a certain quality and the differences can be measured. What the psychologists did not consider was the complexity of measuring people's intelligence:

> *Most of what we can measure now, behaviourally, is neurologically immaterial on the optimal development of the brain* (Jensen 1995:4).

Bender (1992:122-129) explains that different models or theories of intelligence were developed. He distinguishes among the psychometric models, developmental models, information processing models and the fenemenological pedagogic approach. The psychometric models are factor-analytic studies, which suggest that there are one general intelligence (g) that is used to perform mental tests, but each test also requires specific abilities in addition to general intelligence. What it means is that people do have special abilities, but people performing well in one factor, usually also perform high in other factors.

American psychologists chose to depict intelligence as a combination of multiple abilities with a positive correlation among the separate mental abilities. Thorndike (1913) identified three clusters of intelligence, namely social intelligence, concrete intelligence and abstract intelligence. Thurstone (1938) defined intelligence as different abilities and identified a few primary factors, such as verbal comprehension, memory, reasoning, ability to visualize

spatial relationships, numerical ability, word fluency and perceptual speed. These abilities do not function independently, but as an interconnected whole. Guilford (1950-1970) identified one hundred and twenty different factors which are used in a combination of different ways. The psychometric models thus define intelligence according to the correlation between intellectual abilities. It is a quantitative description of intelligence and the relevance of the IQ test score were rarely if ever questioned.

Bender (1992:132) further claims that the developmental models of intelligence have been revolutionized by the works of Hebb (1948) and Piaget (1950). They were interested in how the infant comes to perceive a world of objects independent of himself or how do children learn about the world. Piaget had a qualitative conception of intelligence as *"a particular instance of biological adaption"*. Mental development facilitates learning. Intellectual development is determined by assimilation (incorporating new events into pre-existing cognitive structures), accommodation (existing structures change to accommodate the new information) and equilibrium (a balance between individual and environment or assimilation and accommodation). Although it is not a quantitative description of intelligence, it is predetermined and holds definite limitations to the development of intelligence.

The information processing models propose a concept of multiple cognitive abilities. Woolfolk (1980:116) states that performing a cognitive task is essentially a mental operation on some specific content to achieve a product. These psychologists believe that elementary information processing is the basis of behaviour. Sternberg (1985, 1990) developed a triarchic theory of intelligence. It is a cognitive process approach with three parts, namely analytic (mental process), creative (coping with new experiences) and practical (choosing an environment in which to succeed). Another information processing model is Gardner's model of seven intelligences. Gardner (1983) suggests that there are seven multiple intelligences or categories of human abilities. In some recent interview Gardner described an eighth intelligence, namely the naturalistic intelligence. Armstrong (1994:14) describes Gardner's multiple intelligence theory (MI theory) as a cognitive model that seeks to describe how individuals use their intelligence to solve problems or fashion products. The model is process orientated, because it is a model describing how the human mind operates on the contents of the world. The world in which the learners have to solve problems (think) and fashion products (create) is a postmodern world.

5.5.2 POSTMODERN VIEW ON INTELLIGENCE

The psychologists and educators were influenced and dominated by the Western Science

Paradigm of the modern era. It was a paradigm described as objective, measurable, limited and controllable. It is then understandable why Binet's successors believed that intelligence is a unitary construct, individuals differed in how intelligent they were and intelligence existed from early in life and could probably not be altered. The excitement about IQ tests, in true modernistic sense, was that intelligence seemed to be quantifiable, measurable and could be used to predict the future of a learner. According to this view, intelligence was also perceived as predetermined and limited from which there is no escape. Boeyens (1989:4) confirms this by stating that the scores of IQ tests are interpreted as if they reflect the ceiling of the learner's ability and fail to identify many learners in disadvantaged groups who have the potential to succeed. Past learning must be taken into account.

The postmodern concept of multiculturalism is an acceptance of the diversity of people who belong to different cultural groups. South Africa is par excellence a country of cultural diversity where most of the learners from certain cultural groups were not exposed to comparable educational opportunities with limited consequences. If then *"psychometric tests of cognitive ability largely assess the effect of previously educational exposure"* (Boeyens 1989:2) modern psychometric tests of cognitive ability (IQ tests) is not a reliable instrument to measure intelligence. The measurement of learning potential will be a more viable and postmodern approach to the prediction of future educational achievement and success in later life of the learner.

It is only the logical-mathematical intelligence and the linguistic intelligence that were traditionally recognised as intelligence. It is significant that the function of the right brain hemisphere (holistic-emotional) was completely ignored in the traditional view of intelligence. The learner did not get the opportunity to develop learning potential in terms of intelligences. It is significant that the right hemisphere is associated with more abilities or intelligences than the left brain hemisphere.

Gardner (1993: 218-219) revolutionised this view on intelligence when he explained that *"in my own work, I have spurned formal testing completely. Instead, I have sought to document the existence of different human intelligences"*. Gardner believed it was necessary to develop *intelligence-fair* means of assessment: a method that looked directly at an intelligence rather than indirectly through the all-too-familiar lenses of linguistic and/or logical thinking. Byzan (1991:27) confirms this opinion by claiming that the IQ protagonists have been obsessed with the tests and the results and have neglected the real nature of the brain being tested. These tests do not test basic human ability, but untrained and undeveloped human performance. IQ tests were originally constructed to assess learners' capacity to

achieve academically and does provide some indication of ability to learn, but only a very general and incomplete indication (Boeyens 1989:11).

Gardner (1993:6-7) holds a postmodern view of diversity and plurality and rejects the one-dimensional view of intelligence. There are vast differences among individuals in their individual strengths and weaknesses as well as different cognitive strengths and contrasting cognitive styles. Individuals do develop different intellectual profiles, yet within each individual various intelligences interact with the result of a unique blend of mental abilities. To develop learning for each individual learner the learning environment must accommodate diversity of mind. The learners must be assisted in knowing own minds and capitalize upon the thinking and learning style they do best.

Tests should be abolished and instead there should be looked at more naturalistic sources of information about peoples around the world. People develop skills important to their way of life. A word for intelligence in a society of sailors would probably be navigational ability. Gardner (1993:7) defines intelligence as the following:

> *...the ability to solve problems or to fashion products, that are valued in one or more cultural or community settings.*

Gardner (1998:26) admits that it is a contentious definition, because *"we can look at people's problem solving ability quite snappily, we cannot look so easily at whether they can actually do anything with it"*. Another problem is that intelligence is something that has to be recognized and valued in the specific community. Personal intelligences are for example very important in Japan.

Intelligence also has a historical context. Armstrong (1994:9) mentions that certain intelligences seem to have been more important in earlier times than today. When the majority of people lived in rural settings, doing physical hard work, bodily-kinesthetic intelligence was highly valued. In a postmodern world where people receive their information from films, television, videotapes and CD-ROM technology, the value placed on strong spatial intelligence may increase. It is necessary to develop a broader view to intelligence in the learning environment.

5.5.3 EDUCATING FOR MULTIPLE INTELLIGENCE IN A POSTMODERN LEARNING ENVIRONMENT

The concept of a transformational curriculum is to move away from the traditional view of sameness where all learners had to express their understanding in the same ways. Gardner (1998:34) feels that an educational system that treats everybody in the same way, should be abundant for an *individually orientated system*, in which we try to understand how the mind of each learner works and to accommodate the different ways of understanding, in a way comfortable for each learner. Jensen (1995:8) shares the view that the capacities of the learners were vastly underestimated. The learning environment should accommodate the potential of every individual learner, because learners learn differently and a learning environment climate should be created where every learner is respected and nourished.

The envisioned outcome for a transformational postmodern curriculum is competent future citizens. Gardner (1993:9-14) holds the view that IQ tests predict school performance with considerable accuracy, but is an indifferent predictor of performance in a profession after schooling. Woolfolk (1980:121) holds the same view: *"IQ scores and school achievement are not highly correlated with income and success in later life. Other factors like motivation, social skills, and luck may make the difference"*. It is the task of the school to develop intelligences and help learners reaching vocational and avocational goals that are appropriate to their particular spectrum of intelligences. Gardner (1993:26) explains that in the past it was believed that adult roles depended largely on a single intelligence. In fact, every adult role requires a combination of intelligences that interact and build upon one another. The combining of intelligences is apparent for example when playing a music instrument. Playing the violin transcends a reliance on musical intelligence only. Bodily-kinesthetic intelligence, intra-intelligence and inter-intelligence are also needed.

Gardner proposes seven different intelligences. The first two intelligences are mainly associated with the logical-analytic left hemisphere of the brain and the rest with the holistic-emotional right hemisphere of the brain.

Each of the seven different intelligences have certain core abilities to be recognized as an intelligence. The core abilities of each intelligence are the following:

✓ Raw pattern ability - abilities that appear universally it may appear at a heightened level in some population groups and it predominates during the first year of life.

✓ Symbol system - language is encountered through sentences and stories, music through song, spatial understanding through drawing, bodily-kinesthetic through

Table 2.4 Seven intelligences according to Gardner (1993)

Left brain hemisphere intelligences	Right brain hemisphere intelligences
Logical-mathematical intelligence The capacity to use numbers effectively and to reason well.	**Spatial intelligence** The ability to perceive the visual-spatial world accurately and to perform transformations upon those perceptions.
Linguistic intelligence The capacity to use words effectively, whether orally or in writing.	**Music intelligence** The capacity to perceive, discriminate, transform and express musical forms.
	Bodily-Kinesthetic intelligence Expertise in using one's whole body to express feelings or useing the hands to transform.
	Interpersonal intelligence The ability to perceive and make distinctions in mood, intentions, motivations and feelings of other people.
	Intrapersonal intelligence Self-knowledge and the ability to act adaptively on the basis of that knowledge.

gesture or dance and so on.

✓ Notional System - mathematics, mapping, reading, music notation and so on.

✓ Vocational and avocational pursuits - logical mathematical intelligence begins as sheer pattern ability, develop through symbolic mastery and notions of school years and achieve mature expression in adulthood in such roles as an accountant, engineer and others.

Most learning material can be presented in many different ways providing opportunities for concept development in each intelligence and to develop the learning potential of each learner. The postmodern educator should be aware of the different intelligences in the choice of a learning experience. A music lesson can be presented by means of all seven intelligences as well as taking to account that the learner is a postmodern individual, learning for example through own dialogue and autobiographical information. Another way is by introducing some of the elements of multiple intelligence in the performance task.

In the linguistic intelligence domain the educator should provide opportunities to think about the text and to discuss and debate the content of the songs. By means of cooperative learning each group can have the opportunity to sing a musical phrase to decide which way reflects the text best. It will reinforce the integration between text and melody. Making use of vernacular language text can be exiting and a challenge to the linguistic intelligent learner.

The logical mathematic intelligence domain can be accommodated by decoding the notational and rhythmic system of music. Practice sight reading with the solfa syllables and analyze and construct own rhythm patterns. Critical thinking is part of this domain. Teach the learner to make use of meta cognition by carefully analyzing the errors and problems of a taped performance. Compare musical styles by making lists of the characteristics of the different styles. These learners favour a predictable classroom routine that is still flexible to allow change.

The visual-spatial intelligence is one of the least accessed intelligence and requires creativity from the educator to incorporate it into the learning programme. The use of pictures (visual information), imagination and metaphors are ways to develop spatial intelligence. Find pictures or make drawings to capture the mood of a song. Have learners imagine a story, while playing incidental music such as Mussorkski's *Pictures on an exhibition*. Tone colours can be associated with different colours as well as marking or highlighting scores in different colours. Be aware of the visual aspects of the classroom.

The bodily-kinesthetic intelligence is an important part of the new Arts and Culture learning area. Dancing is a very important means of enhancing bodily-kinesthetic intelligence. Simple hand movements or movements to illustrate certain elements of music are a valuable way to incorporate the intelligence into the learning program.

The following are more examples of integration of other learning areas into the music curriculum (Armstrong 1994:77-78).

✓ Rhythm, songs, raps and chants - Take the essence of what is being taught and put it in a rhythmic format. At rote learning level spelling words may be sung using a simple rhythm. Invite learners to create songs, raps and chants that summerize, synthesize or apply meanings from other learning areas to music. It incorporates both

brain hemispheres. Enhance the learning experience by incorporating instruments.

✓ Discographies - The extended or non-traditional role of the music educator may be to supplement the school with lists of recorded musical selections to illustrate or amplify the learning content of the different grades. For the Human and Social Science learning area a collection of songs about the different wars may be collected and updated. Examples of such songs may be *When Johny comes marching home again, The battle of the hymn of the republic* and many other. Music to illustrate Newton's first law of motion, the song *Something gotta give* may be added to the media centre's music collection to develop learning potential in learners.

✓ Super memory music - Learners can easily commit information to memory if they listened to the educator's instructions against the background of slow Baroque and classical music. Learners should be in a relaxed state, while the information is given to the learners in a rhythmical way, changing the level and dynamics of the voice.

✓ Musical concepts - Music can be a creative tool to express concepts. An example is the teaching of geometric forms in grade one by humming at a certain tone to express a certain geometrical form. Any other concept may be taught by means of sound and even movement. An example is when the learners choose a geometric form they would like to present to the class. After discussing the presentation they practice the necessary sound and movement.

✓ Mood music - Use music to create the appropriate atmosphere as part of the learning programme to deepen the understanding of concepts.

Gardner (1993:32-33) explains how to apply MI theory in the learning environment. Suppose a child is learning some mathematical principle, but is not skilled in logical-mathematical intelligence, the learner will experience difficulty in grasping the principle. There is a solution to the problem by finding another route to the mathematical content. Language, spatial modelling or even bodily-kinesthetics may be the solution to the problem. It must be stressed that the second route is only a metaphor of translation and at some point the learner must translate back into the original domain. As learning becomes more complex the likelihood of a successful translation may diminish. A word of warning comes from Kassell (1998:31-32) when she states that educators should be wary of pulling skills out of context and equating memorization with understanding. Discrete discipline skills (music and otherwise)

need thinking skills or higher order concepts that should rather be the integrative thread and not superficial MI links. Applying multiple intelligences in the postmodern learning area recognizes the diversity of the learners, but should not be seen as diluting the intelligences to applications of their lowest common denominator. Gardner (1998:33) echoes that a lot of uses of multiple intelligence may be well intended, but they tend to be superficial. It might turn out that there is an interesting organizing capacity in music that extends beyond itself.

5.5.4 EMOTIONAL INTELLIGENCE

It has been pointed out that postmodern thinkers realized that there is more to success than academic intelligence only, as postulated by the Western Science Paradigm. Emotional intelligence have to be included in the concept of intelligence. To be emotional intelligent means to be emotional literate. Learners have to learn to be intelligent about their emotions and apply the knowledge and skills learnt to daily life.

Goleman (1996:43) lists five categories of emotional intelligence and Wilks (1998:11-12) adds a sixth category. They are as follows:

✓ Knowing one's emotions - Self-awareness is the ability to recognize feelings when they happen and the events that evoked the feelings. It may be an uncomfortable emotion which does not fit the view of the self, but it is important to recognise the emotion and to be aware of experiencing the emotion. If the emotion can not be labelled, it is still important to know of the emotional state.

✓ Managing emotions - This relate to the uncomfortable emotions, once they are accepted. It means to develop an *inner mothering mode* to sooth when things are difficult, but also to push to greater heights when necessary. Emotional intelligent people can manage both themselves and other people better.

✓ Motivating oneself - Emotional self-control must be developed in learners. It is sometimes necessary to delay a certain emotional need and deal with the need later. A way to not only delay emotions, but to channel emotions into a positive direction is by entering the *flow* experience which enables outstanding performance. Csikszentmihalyi (1995:14) defines *flow* as a non academic word which describes a feeling of doing something that is so enjoyable that you want to keep on doing it.

- ✓ Recognising emotions in others - If a person is able to recognize his or her own emotions they will be able to sense emotions in other people. This develops in empathy and not sympathy, which can be a patronizing emotion.

- ✓ Handling relationships - Understanding other people's emotions give rise to the ability to motivate them. It is a quality that educators need.

- ✓ Transforming emotions - This study places great emphasis on transformation which leads to understanding. Transforming emotions means that negative emotions can be transformed into positive emotions. The effects are potentially far-reaching if we realize that everything in life is potentially transformative.

Music has the innate ability to increase the connection between the left and right brain hemisphere, because music works with the emotion and emotion is created by thought (Wilks 1989:21). Goleman (1996:9) confirms that the emotional end rational mind operates in tight harmony intertwining their different ways of knowing to guide us through the world. Thinking and learning can act as an interactive system, but requires the development of thinking and feeling. Emotional learning is to discover the reason why you feel as you do. Goleman (1996:40 & 41) claims that Gardner's description of personal intelligence reflects a more cognitive approach - a more awareness of one's mental processes - *"rather than on the full range of emotional abilities"*. The learners get the opportunity in the music learning environment to learn to recognize emotions and to handle negative emotions. Wilks (1998:6) points out that learning to work with emotions can ultimately give birth to ourselves as whole human beings.

5.5.5 MUSICAL INTELLIGENCE

The importance and necessity of music as part of human intellectual development has been discussed as far back as ancient Greece in the 6th century BC. As research on the learning process continued, so did philosophical concerns about the importance of music to human development (Feierabend 1996:66).

Describing exactly what music intelligence is and determining how to measure it, have been debated for over a century. Various writers proposed different definitions of musical intelligence. Gardner suggests that music intelligence is a separate intelligence and equally deserving of development. Musical intelligence has nothing to do with formal music

education, but individuals with high music intelligence can *think music* with greater clarity and are affected more deeply by music in an aesthetic sense than people with less musical intelligence. Murphy (1999:40) describes musical intelligence as *a way of knowing*. It is the ability to think musically intelligent, whether a performer, composer or listener. Woodford (1996-1997:49-51) adds to the definition of musical intelligence by proclaiming that the concept of musical intelligence is usually associated with development, application and measurement of musical skills and abilities or with cognitive processes that manipulate sound internally. Such beliefs of musical intelligence are inadequate for the reason that social context is ignored. There is an abundance of social forces that ground and shape musical intelligence or musical thinking. The types of musical intelligence that really matters are the constructing of a musical self. Constructing musical intelligence is to exert conscious and purposeful control over own musical thinking and learning. Musical intelligence is sociocentric as society and cultural grouping determine how musical intelligence is acquired and by providing a social frame of reference and standard for making judgement to musical taste, preference and individuality.

As in the other domains, music has not escaped the preoccupation of the modern era, with measuring and testing. Numerous attempts to measure musical ability have been performed and debated. The developments of musical ability tests are concerned with measuring musical achievement, musical aptitude and musical knowledge. But the question proposed by Murphy (1999:41) is what does these tests tell us about musical intelligence? Does the testing of musical ability shed any light on musical intelligence? Murphy (1999:43-44) points out that various intellectuals have proposed different perspectives on music ability and musical intelligence. A group of intellectuals support the fact that tests on music ability, examine music intelligence. Musical abilities are conceived as part of general intelligence and claims that intelligence is what intelligence tests test - intelligence tests or musical ability tests address musical intelligence. It is reasoned by some of these intellectuals that musical ability tests involve no foreknowledge or test content. The tests are designed to test an individuals potential for skilled musical behaviour regardless of previous learning experience. Other intellectuals claim that it must be taken into consideration that there are differences in the developmental level of musical potential. Children differ widely in the underlying skills and sensitivities they possess. The skills are seen as the elements of music such as rhythm, pitch and timbre. Gardner (1984:104) claims that musical intelligence consists of more than certain elements like rhythm, pitch, timbre etcetera of music only. The affective aspect of music is part of music intelligence and should therefore be part of the test. It should also be

taken into account that musical intelligence is influenced by the other intelligences. Rhythm for instance is perceived as not an innate ability only, but mental activities are involved and can be trained. Murphy (1999:48) argues that another factor that should be taken into account is that the vast majority of musical ability tests are conceived in terms of Western tonality and environmental influences conducive to early musical behaviour. According to these information musical ability tests focus on a narrow group of skills only. The development of musical intelligence as a means to develop learning potential should concern the music educator in the music learning environment.

Feierabend (1996:67-68) explains that each of the different intelligences develops a network of neurological fibres, which allow for the processing of a specific type of intelligence. The network consists of cells and a fibre-like extension from those cells developed, called axons. The axons develop in more fibre-like extensions, which is called dendrites. The dendrites have to grow close enough to another set of dendrites to allow the electrical impulses of thought to leap from one set of dendrites to the next. These sections of dendrites are called synaptic connections. The density of the synapses increases sharply during the first months of life and reaches a maximum at the age of two. The density declines at the age of sixteen and then stays relatively constant until the age of seventy-two. The strength and efficiency of synaptic connection determines the speed and power with which the brain functions. It is clear from this information that optimal nurturing of a specific intelligence will result in the best opportunity to develop the intelligence to full potential. Musical intelligence is stimulated when the musical mind is engaged in early stimulation through hearing and responding to music. Activities such as listening, singing, movement and playing of instruments by ear, stimulate musical intelligence. It is vital when music educators wish to develop music intelligence to be aware of the fact that the activities should not be the reading of music, because then the logical-mathematical rather than musical intelligence is being developed. Neural pathways for musical thinking must be developed and it has to be done as early as possible. Learning an instrument first by ear and then later reading notation would be more likely in developing both skills successfully. Wise (1995:27) confirms that rather than demanding technical and theoretical principles out of context, music should be incorporated in music activities where the learners discover for themselves. The learners must be guided to become musically intelligent or to think intelligently in music. Woodford (1996-1997:52-57) defines musical thinkers as follows:

✓ Musical thinkers can think for themselves. They develop own musical thoughts and share own beliefs, ideas and practices. They feel morally and intellectually

empowered to think for themselves.

✓ Musical thinkers have an understanding and appreciation of the musical world.

✓ Musical thinkers think rationally.

✓ Musical thinkers exert personal and conscious control over own musical thinking and learning to be able to resist social pressure. They are aware of social force, but curious to know more about music.

✓ Musical thinkers do not impose their views on others. They engage in discourse to arrive at understanding and respect. There are values involved in musical beliefs.

✓ Musical thinkers are open-minded and flexible in own musical thinking and believe in diversity of thought.

✓ Musical thinkers belong to different groupings such as amateur groups, but also expert musical thinkers. They believe in multiple musical styles and associate with people of other domains such as visual and literature domains.

✓ Musical thinkers are part of the wider musical community of people committed to intellectual endeavour.

✓ Musical thinkers are sophisticated, knowledgeable and consistent in beliefs and flexible with musical diplomacy. Musical thinkers possess an ethos (guiding belief) of their own general beliefs about how knowledge should be acquired, organized, warranted and applied.

Musical intelligence is thus part of the multiple intelligence theory of learning and involves the concept of the postmodern era to develop the whole person.

5.5.6 CONCEPTUAL FRAMEWORK FOR A MULTIPLE INTELLIGENCE APPROACH IN THE MUSIC LEARNING ENVIRONMENT

The conceptual framework illustrates a multiple intelligence approach in the music learning environment

Figure 2.1 Conceptual framework of multiple intelligence

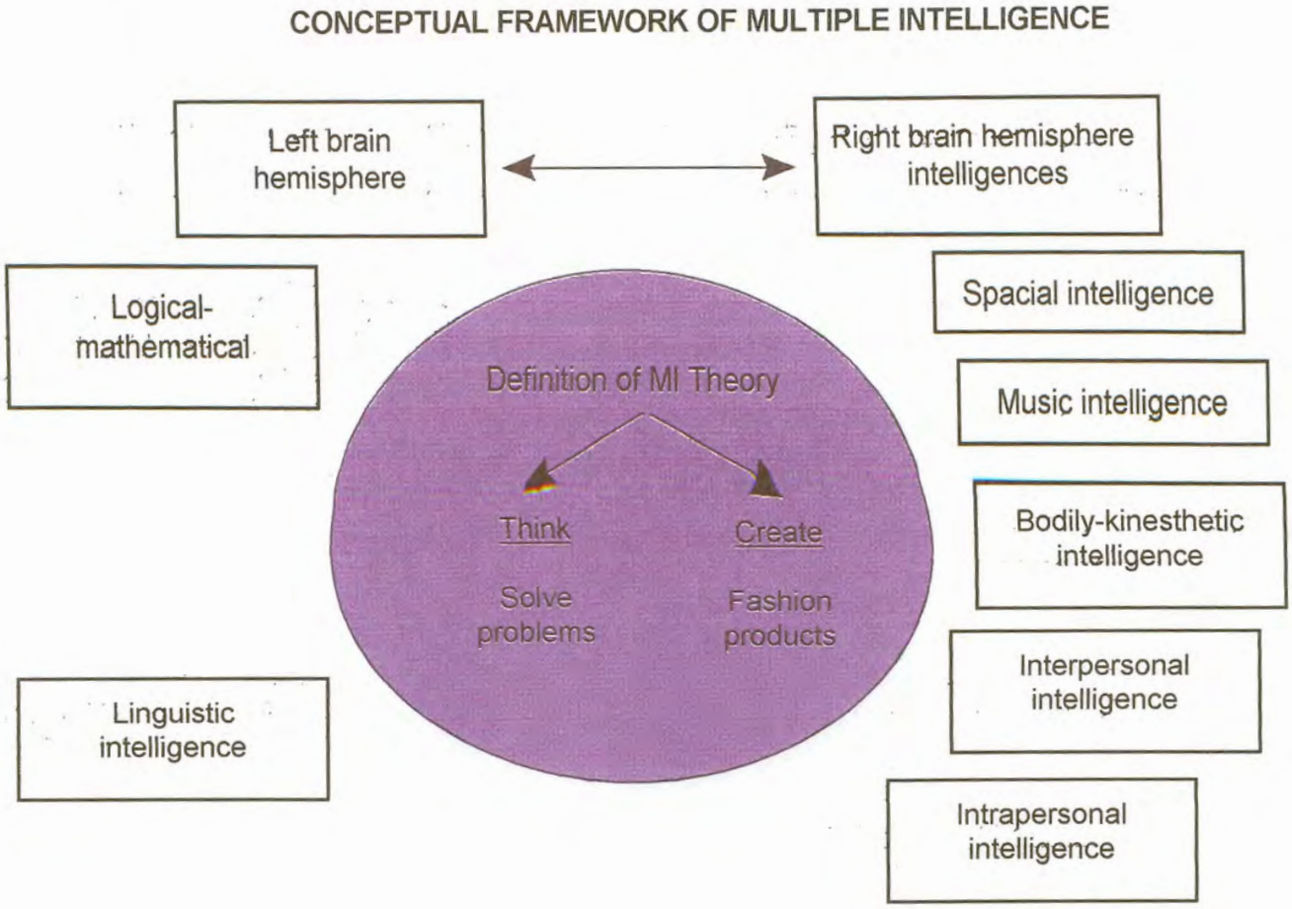


Table 2.5 gives a summary of the interconnected neurological systems.

Table 2.5 Interconnected neurological systems (Armstrong 1994:7)

Intelligence	Neurological systems
Linguistic	Left temporal and frontal lobes.
Logical-mathematical	Left parental lobes - right hemisphere.
Spatial	Posterior regions of right hemisphere.
Bodily-Kinesthetic	Cerebellum, basal ganglia, motor cortex.
Interpersonal	Frontal lobes, temporal lobes (esp. right hemisphere, limbic system).
Intrapersonal	Frontal lobes, parental lobes, limbic system.
Musical	Right temporal lobe.

5.6 WHOLE BRAIN THEORY

5.6.1 INTRODUCTION

For approximately the past one hundred and fifty years, neurologists have known that linguistic faculties are mainly located in the left hemisphere of the brain in the majority of individuals. Research scientist Sperry (1950) observed people with injuries on the right side of the brain and found that they where more likely to suffer loss of speech than people with injures on the left side of the brain. Because speech and language are so closely linked to thinking, reasoning and higher mental functions, nineteenth century (modern) scientists called the left hemisphere the dominant hemisphere (Edwards 1986:27).

During the 1960s, further information on the function of the corpus callosum caused scientists to postulate a revised view of the two hemispheres. It was found that both hemispheres are involved in highly cognitive functioning with each of the brain specializing in a complementary fashion for different modes of thinking. The left hemisphere is verbal and analytic, while the right hemisphere is non verbal and global. The mode of processing in the right hemisphere is rapid, complex, holistic, spatial and perceptual. It was also found that the two modes of processing tend to interfere with each other by keeping knowledge from the other and preventing maximal performance. The two hemispheres can function together in a number of ways, but one of the hemispheres can also dominate (Edwards 1986:29-32).

Jensen (1995:16) later warns that it is an outdated notion that one side of the brain is exclusively logical and the other side creative. Researchers have found that musician's process music more in the left hemisphere and non-musicians process music more in the right hemisphere. Musicians analyze music more that non-musicians. Borchgrevink (1982:151) claims that one might hypothesize that speech and musical functions are likely to be situated in the same cerebral locations, but on the contrary current research shows that speech is controlled by the dominant or mostly left hemisphere and musical functions by the right or non-dominant brain hemisphere. In 1977 it was demonstrated by the selective anaesthesia of successive hemispheres that musical rhythm and the singing act were processed by the speech or left hemisphere and pitch and tonality is controlled by the right hemisphere. Musical rhythm and pitch/tonality are seen to be controlled by different cerebral hemispheres, singing and almost all musical performance implies extensive integration and cooperation between the hemispheres. Other sources of support are Ornstein and

Thomson's experiment to demonstrate that the brain of a normal person activates different hemispheres while thinking (1994:159-160). An EEG showed the sign of the selective activation and suppression of the two brain hemispheres. A student was fitted with EEG electrodes over the left and right temporal and parietal areas of the skull. He was then asked to perform verbal and spatial tasks, namely writing a letter and arranging a set of coloured blocks to match a given pattern. The findings indicated that while writing (presumably a left hemisphere task) he produced high-amplitude EEG alpha waves over the right hemisphere and much less amplitude over the left hemisphere. The pattern reversed while arranging the blocks and the alpha waves dominant over the left hemisphere. There was always a measure of activity in both brain hemispheres, but the dominant area was more active. The research on the left and right brain hemispheres brought to light an awareness of the specialised functions associated with the left and right hemisphere, listed in table 2.6.

The changed perception of the brain had important implications for the learning environment. The modern curriculum with the Western Science Paradigm was equipped to teach the left hemisphere with its logical-mathematical and linguistic preference. In the learning environment the learner progressed through grades in a linear fashion, studying verbal and numerical subjects, followed a time schedule, was seated in rows and learners were tested and measured. The right brain learner was lost in the modernist learning environment. Slowly new dimensions of thinking about the diversity of people emerged: their different brain hemisphere preferences and significant to the learning environment, the influence of brain hemisphere preferences on learning styles. Holistic learning aims to have the two brain hemispheres working together to use the full power of the brain.

Music is a domain that achieves the integration between the brain hemispheres. Clark (1986:6) confirms the need for integrative use of the brain functions. Using mostly only one hemisphere of the brain in the learning process is inefficient and wasteful of human talent and ability. Jensen (1995:17) supplies an example of achieving whole brain awareness in the learning environment. Be aware that the learners are whole brain learners. If an overhead transparency is used, provide learners with global overviews and steps that will be followed. Alternate the *big picture* and the details.

Table 2.6 Special functions of the two brain hemispheres (Edwards 1986:40)

Left hemisphere	Right hemisphere
Verbal Using words to name, describe and define.	**Nonverbal** Awareness of things, but minimal connection with words.
Analytic Figuring things out step by step.	**Synthetic** Putting things together to form wholes.
Symbolic Using symbols that stand for something.	**Concrete** Relating to things as they are in the present moment.
Abstract Taking out a small bit of information and using it to represent the whole.	**Analogic** Understanding metaphoric relationships.
Temporal Keeping track of time, sequencing one thing after the other.	**Non temporal** Without a sense of time.
Rational Drawing conclusions based on reason and facts.	**Non rational** Not requiring a basis of reason or facts.
Digital Using numbers as in counting.	**Spatial** Seeing things where they are in relation to other things and how parts go together to form a whole.
Logical Drawing conclusions based on logic.	**Intuitive** Making leaps of insight, often based on incomplete patterns, hunches, feelings or visual images.
Linear Thinking in terms of linked ideas, one thought directly following another.	**Holistic** Seeing whole things all at once, often leading to divergent conclusions.

5.6.2 WHOLE BRAIN THEORY

Development on brain research almost exclusively focused on left and right hemisphere preference until the development of Maclean's (1970) Triune theory (figure 2.2). According to the theory the human brain is in reality three brains, each superimposed over the earlier in a pattern of brains within brains.

Ornstein and Thomson (1994:4) explain the development of the brain and its specialized functions ascribed to human evolution. The human brain developed from the brainstem. It is referred to as the reptilian brain, because it resembles the entire brain of a reptile. It is driven by instinct and warns the organism of important incoming information and handle basic bodily functions such as sensory motor imagery, breathing and heart rate. Accelerated learning addresses this non-verbal part of the brain. The mammalian brain contains the

limbic (emotion system). Ornstein and Thomson (1994:8) state that the limbic system (figure 2.3) is most highly developed in mammals and is often referred to as the mammalian brain. It turned into the neocortex, responsible for thinking, perceiving, speaking and acting as civilised beings.

Figure 2.2 Triune brain

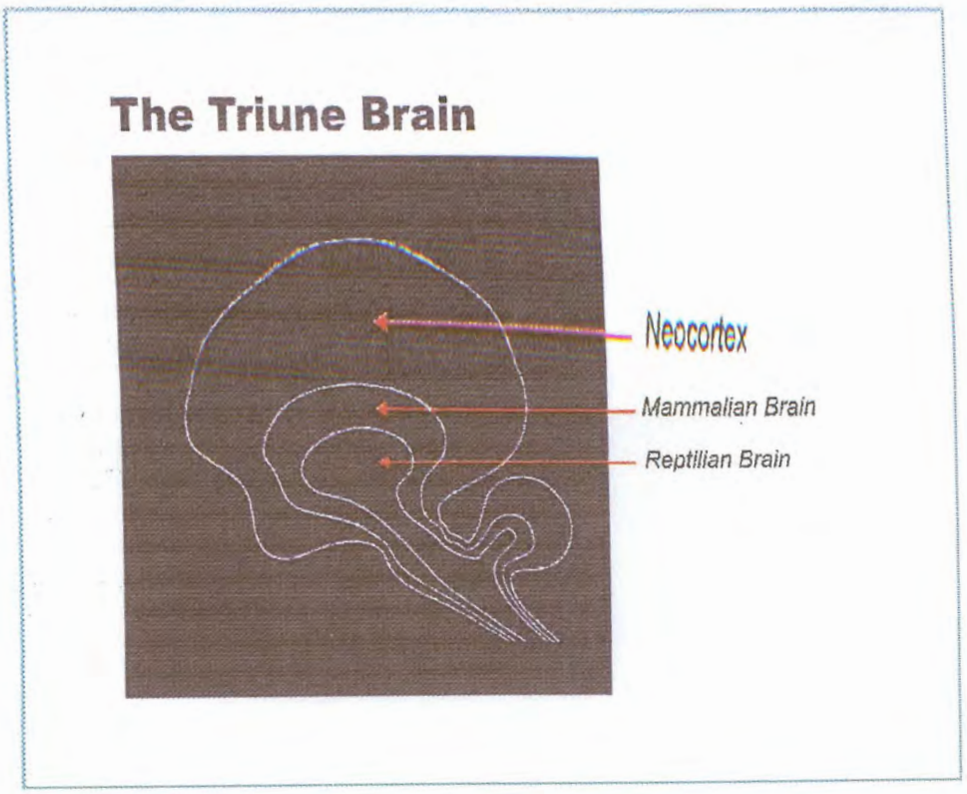
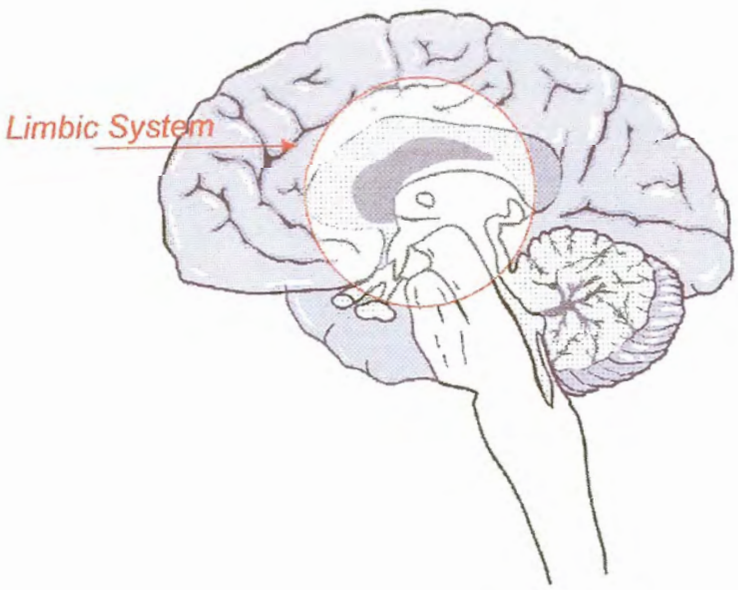
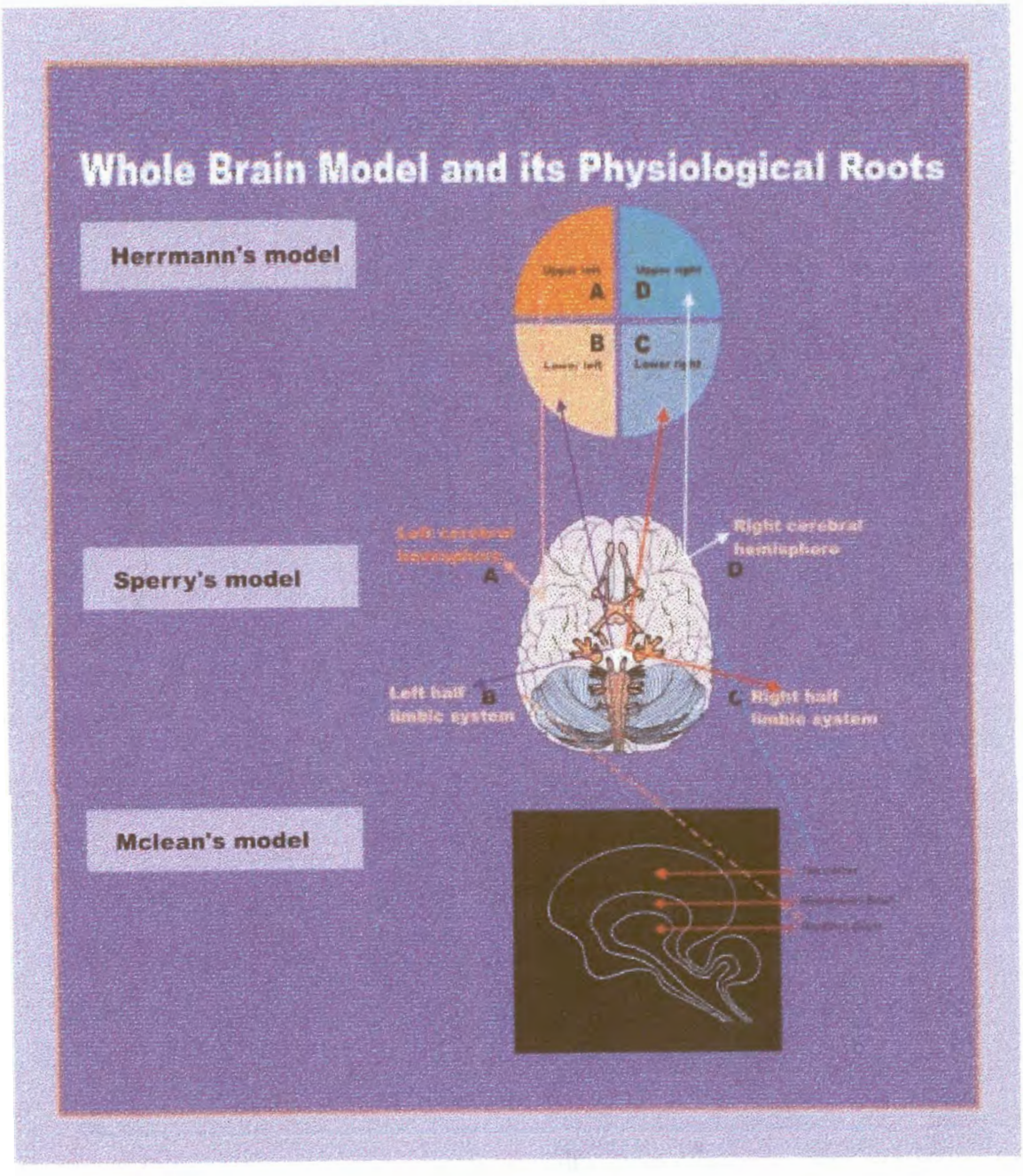


Figure 2.3 Limbic system



The role of the limbic system was either overlooked or ignored for a time. The limbic part of the brain is a small, complicated structure, divided into two interconnected halves within each of the cerebral hemispheres. It is not easily detectable and can only be viewed through computer modelling techniques. It is more primitive compared to the neocortex of the cerebral hemisphere, but also capable of thinking. With the help of the Maclean (1970) model, Herrmann (1996:13-16) combined elements of the Maclean and Sperry models into a four-part model representing the whole thinking brain and its psychological roots.

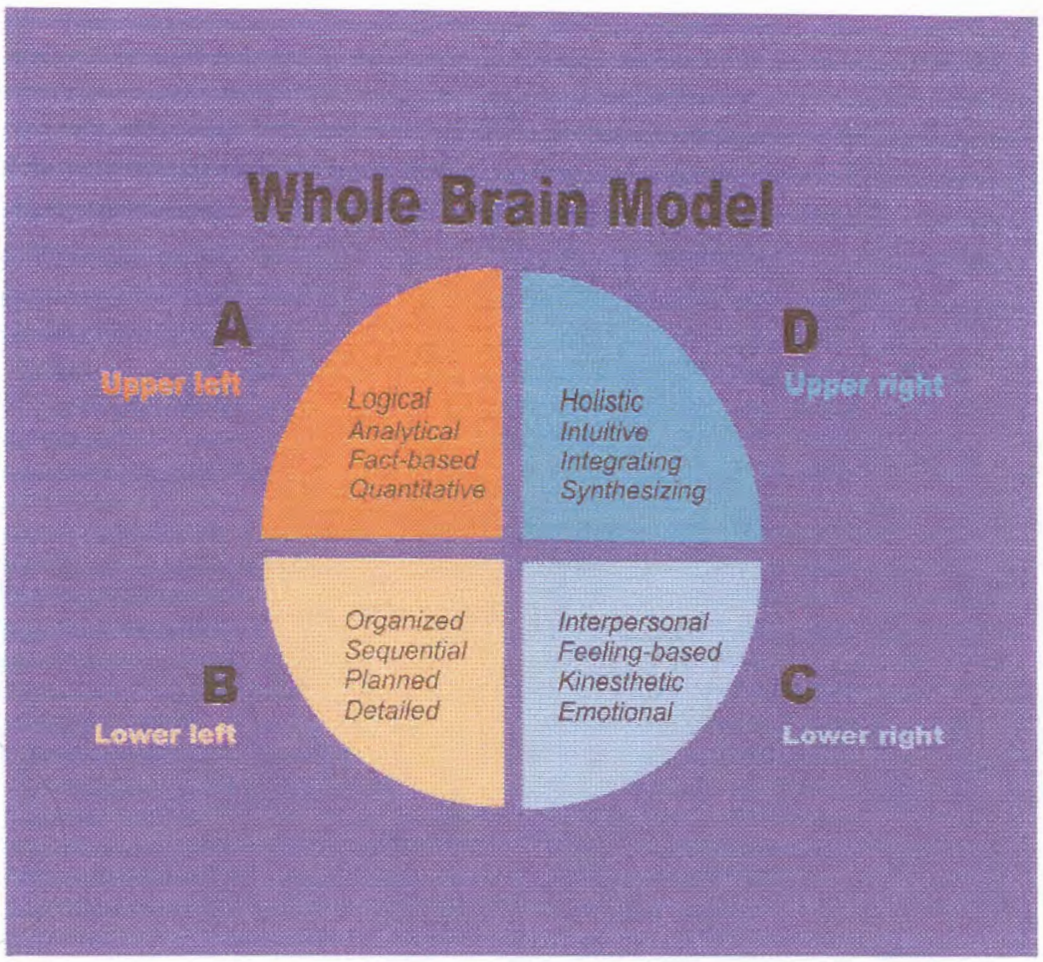
Figure 2.4 The whole brain model and its psychological roots



5.6.3 THE HERRMANN FOUR-QUADRANT WHOLE BRAIN MODEL

A four-part model was proposed representing the whole thinking brain.

Figure 2.5 The whole brain model



Four thinking styles, representing the two halves of the cerebral cortex and two halves of the limbic system. Each of the four thinking parts of the brain is specializing in a different way, but function together situationally and iteratively, making up a whole brain in which one or more parts becomes naturally dominant. The upper left A-quadrant is the focus of logical, analytic, fact-based and quantitative thinking. The lower left B-quadrant is the location for organized, sequential and detailed kinds of thinking. The lower right C-quadrant is the location for interpersonal, feeling-based kinesthetic and emotional processes. The upper right D-quadrant is the focus for holistic, intuitive integrating and synthesizing processes.

Herrmann (1996:16-18) believes that although the body is apparently symmetrical it is actually asymmetrical. There are differences between paired structures throughout the body, such as hands, feet, eyes etcetera. Most of the world's population exhibit a dominant

hand and arm. The same dominance occurs in the paired structures of the brain. One member of the pair develops a higher level, through increased use and due to preference, than the other. The development of preferences leads to the development of interests, competencies and influence choices people make. It is called thinking styles and Herrmann (1996:29) developed the Herrmann Brain Dominance Instrument (HBDI) to chart the location of thinking styles or mental preferences of people.

5.6.4 EDUCATING THE WHOLE BRAIN

Further research ascertained that each hemisphere contains many more of the other hemisphere's abilities and is capable of more subtle ranges of mental activities. Byzan (1991:18-19) discusses Einstein and other great scientists who seemed to be predominant left hemisphere dominant, but turned out to be whole brain dominated. Einstein numbered among his activities violin playing, art, sailing and imagination games. It was while daydreaming that he realized that the universe must be curved and gave way to the relativity theory. Artists wrote books full of detailed information (left-hemisphere activities) on how exactly they painted their works of art. The *great brains* were using both ranges of their capacity:

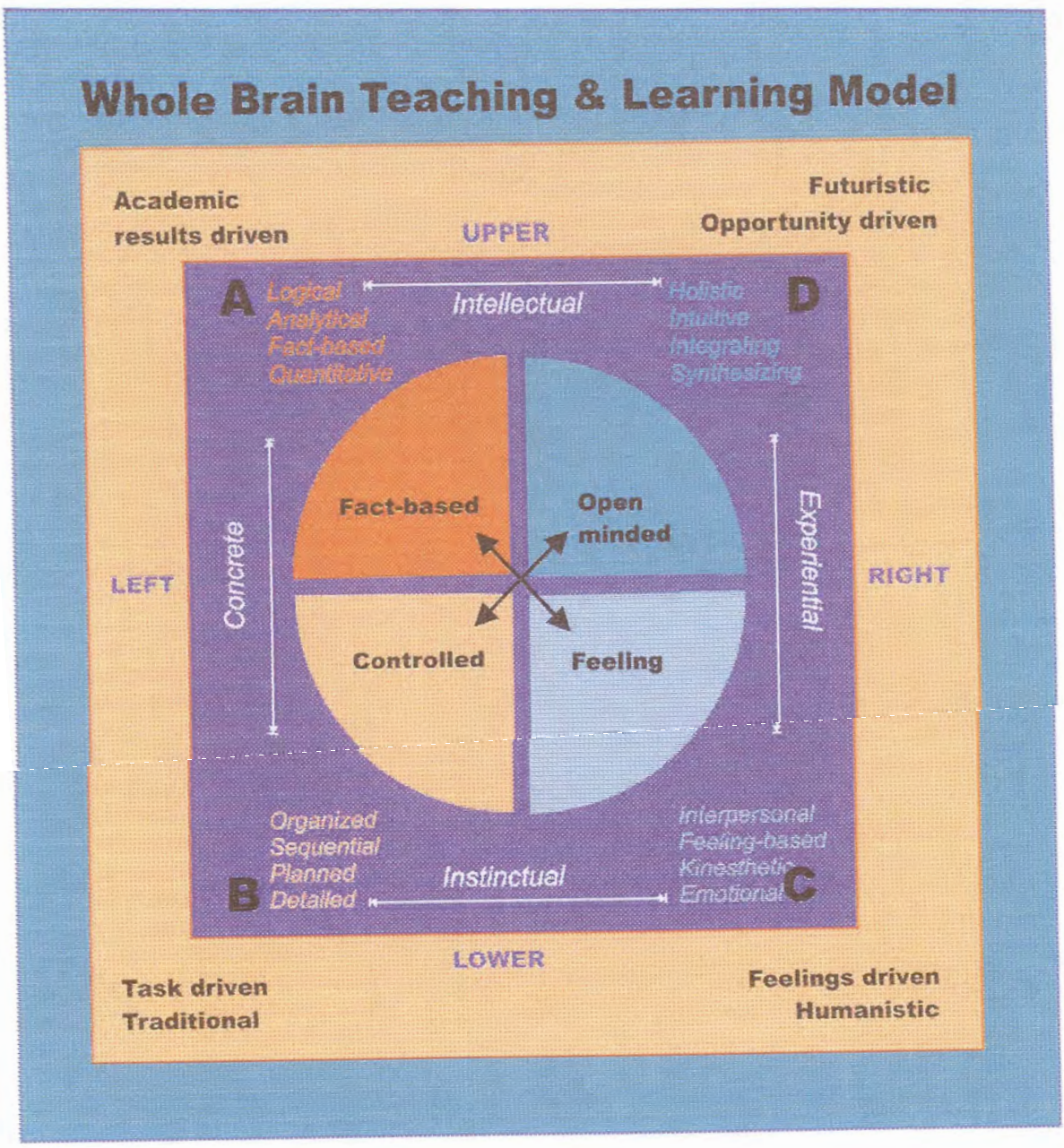
> *My research into the brain leads me to believe firmly that the grand design is to be whole; that the normal, ordinary, everyday brain is spesialized and interconnected in ways that position it to develop as a balanced, multidominant brain capable of accessing and using all of its mental options* (Herrmann 1996:35).

Effective learning takes place if the whole brain is involved in learning. Interpreted in terms of Herrmann's model this presupposes that all four brain quadrants should be included in teaching and learning activities. The cognitive functions of all four-quadrants should be taken into account when teaching and learning takes place. Cognitive functions should comply with the learner's preferred mode of thinking/learning. Educators should not conduct teaching and learning in own learning style preference. Educators should present the learner with a learning environment that stimulates the use of the whole brain to develop the potential of each learner. Herrmann (1996:155) proposes a whole brain teaching and learning model.

According to this whole brain teaching and learning model the teacher is represented in the centre. The arrows indicate the iterative nature of the activities as they correlate with the

psychology of the interconnected brain. The left mode deals with the logical, rational, quantitative activities, as well as the organized, sequential, procedural and methodical activities. The right mode is characterized by visual, conceptual, simultaneous, experimental activities as well as emotional, expressive, interpersonal and kinesthetic activities. Educational activities that implement all the modes of the model will ensure that the learners preferred thinking styles are accommodated, but less preferred learning styles are also utilised.

Figure 2.6 Whole brain teaching and learning model

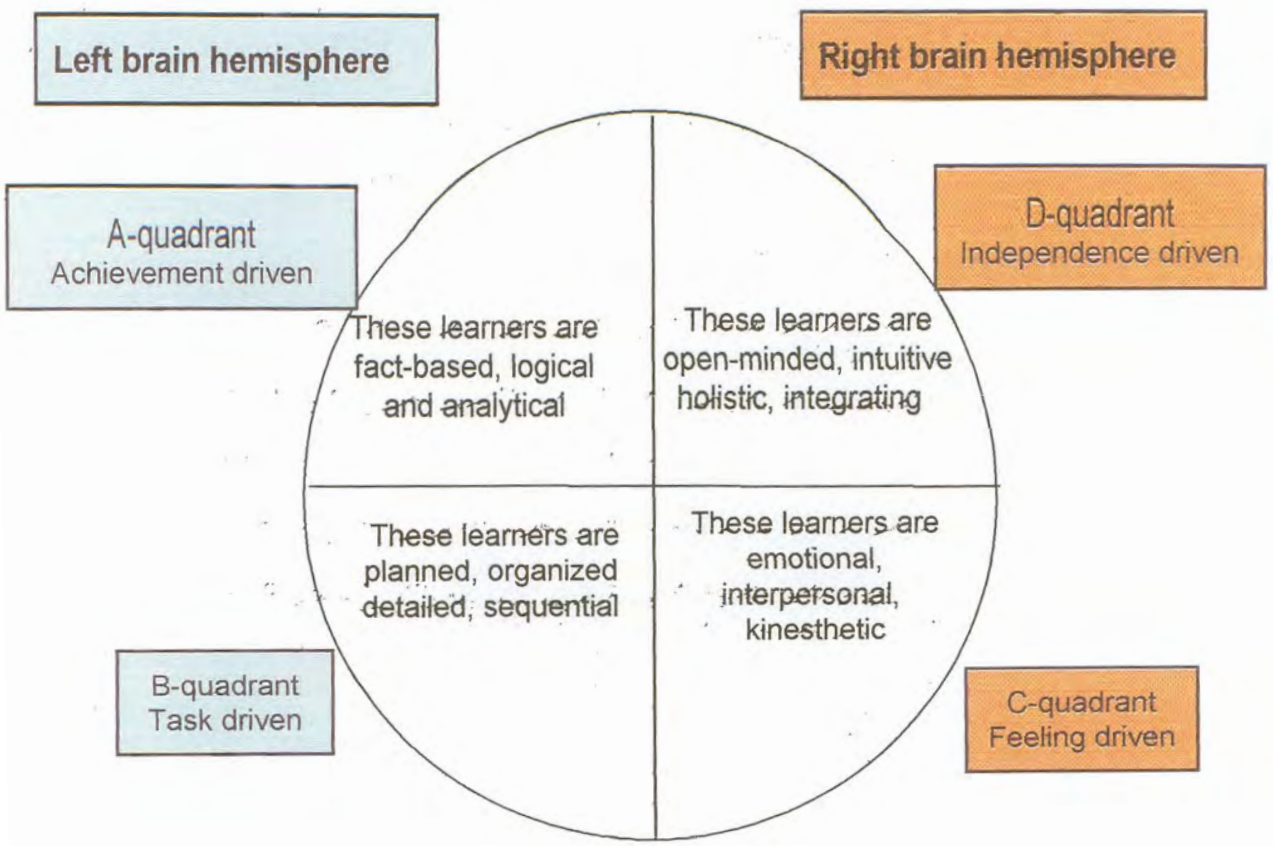


5.6.5 CONCEPTUAL FRAMEWORK FOR A FOUR-QUADRANT WHOLE BRAIN APPROACH IN THE MUSIC LEARNING ENVIRONMENT

The conceptual framework illustrates the four-quadrant whole brain model as proposed by Herrmann.

Figure 2.7 Four-quadrant whole brain conceptual framework

FOUR-QUADRANT WHOLE BRAIN CONCEPTUAL FRAMEWORK



5.6.6 INTERACTIVE USE OF MI THEORY AND WHOLE BRAIN APPROACH TO DEVELOP LEARNING POTENTIAL

When studying MI theory and the model of whole brain thinking preferences, it becomes clear that the two models complement each other. The learner with the logical-mathematical and linguistic intelligences are accommodated in the A-and B-quadrant of the whole brain model. The C-quadrant of the whole brain thinking style accommodates the interpersonal, intrapersonal, bodily-kinesthetic and musical intelligence, while spatial intelligence is to be found in the D-quadrant of the whole brain thinking.

Learners with the logical-mathematical and linguistic intelligence prefer formal academic

driven learning, with to the point lectures, case discussions, numbers, data and programmed learning. They also respond to task driven traditional learning which is organized, sequential, procedural and methodic.

The learner with the music-, kinesthetic-, interpersonal- and intrapersonal intelligences fall into the C-and whole brain thinking model. The C-quadrant thinking preference learners develop learning potential by feeling-based learning and respond best to sharing and expressing of ideas, activity based and group learning with emotional involvement.

The learners with spatial intelligence or the D-quadrant thinking preference respond best to futuristic opportunity driven activities such as visual information, conceptualizing and discovering and experimenting. Learning is developed with fun and spontaneity, playful approaches, a quick pace and variety in format.

The postmodern learning environment faces the challenge of a **diversity** of intelligence and dominant learning styles of various learners. In developing learning potential for each learner, educators face the challenge to structure learning programmes to accommodate the diversity of multiple intelligence in learners, with different dominant learning styles. As well as whole brain approach for a transformational curriculum for the twenty-first century.

One of the most promising developments of Curriculum 2005 as an outcomes-based education system, is the emphasis on the integration of different learning areas. The integrating approach indicates that the learner is viewed as a *whole* being. Bresciani (1974:80) feels that this is a very important development to educators interested in the influence of music on the learner, because in music education the learning environment is observed as a dynamic partner in the development of the *whole* learner. The learning environment, intellectual, emotional and psychomotor development is important to the overall development of the learner.

5.6.7 A MACRO LEVEL CONCEPTUAL FRAMEWORK OF AN INTEGRATED HOLISTIC APPROACH TO THE DEVELOPMENT OF THE WHOLE PERSON

The conceptual framework illustrates an integrated holistic approach to develop the learning potential of the learner (figure 2.8).

5.3 CONCLUSION

The literature study explored the modern paradigm and its profound influence on the Western world, including the learning environment. The first traces of postmodernism could be detected, since the late 1960s. The changing postmodern society presents the learning environment with new fundamental principles and tasks. It is the task of the postmodern educator to address the different needs of learners in the changed world. Postmodern curricuralists firmly believe that the best way to assist learners, is by means of a transformational curriculum. A transformational curriculum transforms learners to real and deep understanding for life role performance. A transformative postmodern curriculum acknowledges diversity of learners by utilizing the whole brain and the multiple intelligences of learners. It is clear from the previous discussion that the postmodern world has a significant influence on the learner and the learning environment. Educationalists need to do more than just help learners survive, they need to address the needs of the learners to such an extent that they develop their learning potential to shape and lead the society of the future.

Figure 2.8 Macro level elements of the integrated holistic conceptual framework to develop learning potential through music