

ANDRAGOGY: A THEORETICAL OVERVIEW ON LEARNING THEORIES THAT IMPACT ON BENCHMARKING BLENDED LEARNING AT THE CENTRAL UNIVERSITY OF TECHNOLOGY, FREE STATE

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Abstract

Blended learning has shown enormous growth worldwide during the last decade. Blended learning initiatives expanded rapidly, as technological improvement and a greater demand from learners arose as a result of the need for life-long learning and changing demands in the world of work. Many higher education institutions use blended learning as an alternative for or additional to conventional face-to-face education. The changing needs of learners, and especially adults, forced institutions to upgrade their traditional courses and increasingly make use of technologically enhanced courses.

The research problem encompasses the fact that the growth of blended learning poses many problems to higher education institutions, as the delivery by means of technology is complex. Many higher learning institutions were not prepared adequately to deliver education by using blended learning and did not have the required systems in place. The greatest concern was that staff was not familiar with the technology or its use and that the particular demands of staff arrangements to engage in blended learning programs were not taken into account. It appears that institutions did not plan or have systems and guidelines in place to implement programs at a distance using blended learning technology. Another concern was that most of the programs held traditional approaches and has not been adapted to suit the particular characteristics and needs of distance education by taking the planning, development and review of such programs into consideration. As part of ongoing research at the Central University of Technology, Free State appropriate research had to be undertaken. Consequently the following research question emanated from the research problem:

Within the context of higher education in South Africa, what framework underpinned by andragogy, national education policies and blended learning theory, will benchmark and support the implementation of blended learning at the Central University of Technology, Free State.

1. INTRODUCTION

The aim of the study was to provide an overview of andragogy and learning theories and how this impact on blended learning and the benchmarking thereof at the Central University of Technology, Free State. In general, a benchmark is an institutional approach that contributes to ensuring quality in technology, that mediates distance education, or for measuring any type of education for the purposes of quality assurance.

Set against this background and the Central University of Technology, Free State being a higher education institution, the didactical field of the andragogy was explored and its assumptions served as basis of the proposed framework to benchmark blended learning.

Andragogy, which is the art and science to teach adults, provides an appropriate approach to develop guidelines for adult education. I propose an andragogical approach to blended learning and distance education as an appropriate framework for developing blended learning. The National Department for Education provided policies that contain guidelines that can impact on blended learning and the delivery of distance education. These policies were implemented to level the playing fields of the past as well as to equip our educational dispensation to be globally competitive. Within this context of higher education and with andragogy as basis, this study aims to benchmark blended learning at the Central University of Technology, Free State.

The research conducted showed that strategies are needed to empower lecturers and learners alike to engage in blended learning, as it has become a part of new educational strategies and technology.

The research showed certain shortcomings. The most important one pertains to staff that are not adequately trained in blended learning technologies and the lack of staff available at Technikon Free State to ensure that the institution will indeed become fully operational in delivering blended learning. It is therefore in the interest of the institution to embrace blended learning fully, seeing that increasing numbers of learners will demand blended learning accessibility. Many learners need to be able to use computers in education. Blended learning can be used by learners, not only in distance education, but also by learners on campus. The ideal is that each faculty, as part of the learners' programs, incorporates computer literacy and provides computer facilities to all its learners. A huge shortage exists in computers as the library at the Central University of Technology, Free State only has 250 computers to serve around 8000 learners.

Lecturers should be assisted by support structures at faculties, with, for example, computer technicians, tutors, instructional designers and assistants to fully implement blended learning. The vision and mission of the institution must serve as guide for management and staff.

South Africa's conventional educational system is at technological level not capable of meeting the country's massive educational needs as many rural areas lack the supportive infrastructure. The structure of the system and the practices it is based on can create many barriers for learners. A system needs to be put in place to ensure quality lifelong learning. This system needs to address the needs of South Africans who were deprived of educational opportunities in the past, and also to ensure that the challenges of current problems and issues of education are addressed. It needs to provide opportunities for the youth, but must at the same time address the question of adult education. A system for the twenty-first century has to be put in place to ensure proper education and training that is comparable to international standards (NCHE, 1996: 5; SAIDE, 1994c:1).

As indicated blended learning can assist in the provision of quality learning to adults in the South African context. The Central University of Technology, Free State has instituted a blended learning programme. In order to provide benchmarks for this programme, one of the aims of this investigation is to provide guidelines derived from the principles of andragogy. As a first step, an investigation on the impact of learning theories in blended learning needs to be done so that the principles applicable to blended learning can be incorporated in the proposed andragogical framework for blended learning.

The word 'andragogy' is derived from the Greek word *aner* meaning 'man' and is a term given to a methodology for teaching adults (Knowles, 1990:55). Andragogy has only recently been applied in the educational arena. According to Van Enckevort, a philosopher, a German grammar school educator, in 1833 first used the term "Androgogik". Plato, the Greek philosopher, was the inspiration behind this educator's description. Van Enckevort observed that a more renowned German philosopher Johan Friedrich Herbart opposed the use of the word, causing its disappearance for nearly a hundred years, when it resurfaced in Yugoslavia, Holland and France in 1921. However, in these countries "andragogy" was used to refer to the study of the science and processes of adult education and not as a means of helping learners learn (Knowles, 1990:51; compare Learnativity, 2001:3).

Malcolm Knowles introduced the andragogical model, as we know it today, in 1980. This earned him the title "father of adult education"; not because he invented the term andragogy but because of his popularisation of the concept. According to Mynen (2001:2), Knowles worked for over thirty years in the field of adult education and experimented with different learning styles, techniques and strategies in an environment suited to adults. Knowles was opposed to a lecturing system and promoted working in small group settings in the educational environment (Jarvis, 1995:90; Mynen, 2001:2; Carlson, 2003: [online]). The reason for situating this study within an andragogical framework is that 'andragogy' is specifically concerned with adult learning and the majority of students at the CUT can be considered as adults.

However, the study of adult learning is to be accompanied by a study of learning in general and therefore it is important to understand the principles of learning and how students learn. The development and presentation of blended learning materials should be based on such sound learning theories. The effectiveness of learning materials and the design of the course determine the effectiveness of learning and is a prerequisite in the quality of learning (Rovai, 2002: [online]). A combination of theories can be used to develop and design course materials to select the best theory and most appropriate instructional strategies.

The following theories namely behaviourism, cognitivism and constructivism are discussed in this article as main theories in the development of blended learning materials. Although many overlaps exist in the philosophy and principles of behaviourism, cognitivism and constructivism, each of them contributes in their own unique way towards an understanding of learning. Ertmer and Newby (1993:50) propose that all three schools of thought can be used in instructional

design whereby behaviourists' strategies can be used to teach the "what" (facts), cognitive strategies the "how" (process and principles), and constructivist strategies the "why" (higher level thinking that promotes personal meaning and situated and contextual meaning). The theories are discussed below.

Apart from discussing three main theories on learning, this article aims to identify andragogical principles that can serve as a basis to establish a theoretical background to benchmark blended learning at The Central University of Technology, Free State. Equally important is that andragogy (the art of helping adults learn) is the main pillar of the proposed framework for benchmarking blended learning. In short, the aim of the article is to give an andragogical theoretical overview and to show the interaction with some learning theories and supportive arguments why andragogy should be used to benchmark blended learning at The Central University of Technology, Free State.

2. LEARNING THEORIES THAT IMPACT ON ANDRAGOGY

The following section focuses on theories of learning that have an impact on adult learning. The theories selected all contain elements supportive of andragogy. It is crucial that these elements be incorporated as part of the andragogical framework for blended learning as they are not only supportive in blended learning, but are essential in an andragogical environment like The Central University of Technology, Free State.

Kolb (1984: 8) found that people learn in four ways. Some learners tend to stay with one way while other move between modes of learning. Of importance is that adults prefer to learn through concrete experience, through observation and reflection, through abstract conceptualisation and through active experimentation. A learner-centred approach will increase learning if facilitators utilize the learners' experiences and previously acquired knowledge as part of the learning process. Methods need to be developed, as it is an important element in blended learning in which learners interact and reflect on subject matter. Learning by doing or taking action in the learning process is referred to as experiential learning by Kolb (1984: 9).

Andragogy shares similar characteristics with experiential learning whereby learners are actively involve in the learning process. As elearners, it is important to interact with mutual learners and facilitators as new knowledge is created and a move towards independency through creative thinking is initiated. New knowledge is constructed and meaning is found through constructivism of the related world by means of the learners' interaction with peers and study materials. As experience is so important to adults, adults demand the relevance and application of learning tasks and materials. This needs to be tested against their previously acquired experience and knowledge. Facilitators of blended learning have to consider andragogical principles when planning any learning event. Andragogy, constructivism and experiential learning share common elements that are used to benchmark blended learning (Kolb, 1984:6).

The following section contains aspects of adult learners that are important to support the andragogical assumptions as postulated by Martin Knowles. Each of the theories contains important principles that I believe are essential in the benchmarking of blended learning.

2.1 Behaviourism

Many self-instructional offerings in education are directly based on behaviourist theories (Merriam & Caffarella, 1991:137). Many applications for learners have grown tremendously over time and include programmed instruction, computer-assisted instruction and personalised systems of instruction (PSI). These have proved vital and have played a significant role in educating off-campus (distance education) learners. The rationale behind this type of learning is the behaviourist application where learners are rewarded for correct responses and behaviour (Cross, 1981:232). Learning is a change in observable behaviour caused by external stimuli in the environment (Skinner, 1974 in Meyer, Moore & Vijoer, 1988:191). It is the behaviour of the learner that dictates whether learning has taken place or not. Some educators indicated that not all acquired learning is observable and a change in behaviour is not always measurable and neither observable.

Observable behaviour according to Good and Brophy (1990:15) are indicators of learning. In blended learning learners should be told the explicit outcomes of each lesson. This is well suited and applicable to Outcomes-based Education and blended learning outcomes for each lesson, module or for the course objectives. Testing or assessment should be done and the competency of learners determined. Adequate feedback and reinforcement can be done. Learning intervals should be graded and a move from simple to complex, known to unknown and knowledge to application should be followed (Anderson & Elloumi, 2003:8).

As indicated behavioural instruction needs to be observable, measurable and have controllable objectives. The instructor sets the criteria. Other requirements are set by the requirements of the qualification as laid down by the institution. In blended learning behaviourism can be used through multiple task setting to see whether learners have reached the desired outcomes as required. Tasks need to be broken down in small, measurable chunks. This is an important feature in blended learning that caters especially for e-learners. The behavioural approach is educator-centred and task-oriented. If variation in the workplace is needed a different approach is needed (Learnativity, 2001: [online]). One such approach that adds a new dimension to learning is cognitivism.

2.2 Cognitivism

Cognitivists view learning as an internal mental process. The developmental phases in the adult's path of learning are important as information storage and retrieval form part of such mental structures. The learner is to develop skills to learn better. The educator according to the learning activity structures learning content. Learning manifests itself in cognitive development. Intelligence, learning and memory act as function of the learners' age. Learners learn how to learn. The

mind is the centre of learning and must make sense of stimuli it receives from the environment and through the senses. The storing, processing and retrieval of information are important aspects for cognitivists (Merriam & Caffarella, 1991:137).

A cognitivist's approach towards learning focuses on the internal processes, namely memory, thinking, reflection, obstruction, motivation and meta-cognition. Learning is seen as an information-processing process whereby different types of memory are used during learning (Anderson & Elloumi, 2003:8). Such information needs to be stored immediately to prevent a loss (Kalat, 2002:5). Learners, to facilitate storing and processing of information can assess small chunks of information.

Cognitivists describe learning as the building of an internal scheme (knowledge structure) or the change of an existing scheme of past learning of events. Learning is seen as a developmental process based on prior experience, knowledge and expectations. Knowledge is manipulated to solve problems and to change novices to experts. The crux of the matter is to control and maintain one's own thought processes. This element of expert performance is referred to as metacognition (Learnativity, 2002: [online]).

Metacognitive skills are essential in problem solving and control of learning. It is probably the most important of lifelong learning skills. Programs need to be metacognitively aware, informed and explicit (Learnativity, 2002: [online]). Important is that the different learner styles be accommodated through the learning strategies available in online instruction (Anderson & Elloumi, 2003:14).

The cognitive style of a learner refers to the way of processing information and it is essential for designers to take this into consideration when designing blended learning materials (Kolb, 1984:20). Different activities need to be based and designed on different learning styles (Anderson & Elloumi, 2003:15). Information should be presented in different modes to cater for individual needs. Learners should be motivated through intrinsic and extrinsic motivators. Attention, relevance, confidence and satisfaction are elements to consider (Anderson & Elloumi, 2003:16).

Strategies for online learning should be adopted to store information in the long-term memory of the learner for future use and reference. The relationships between concepts in topics and the relationship between major concepts should be included in blended learning materials. According to Anderson and Elloumi (2003:10) the following strategies can be included to assist students in generating such cognitive structures:

Learners should be allowed to perceive and attend to information by using maximum sensory systems. Important information should be placed in the centre and allow reading from left to right. Important factors should be highlighted. The outcomes of each lesson should be clear and the importance of "why" it should be known emphasized. Material should match the cognitive level of the student to reuse and further investigate and assimilate more complicated materials.

Strategies should be followed to extract existing information from the long-term memory to be applied to newly acquired knowledge and to build bridges between the types of information. An organised presentation of materials (knowledge) will assist in this process. Mental maps can be made with the assistance of summaries. Details of existing knowledge should be presented to join with new knowledge through prerequisite preparation and test questions. Prerequisite learning can also be done or given before the study of new materials. The concept to move from the known to the unknown is applicable as well as from easy to difficult.

Chunk information to prevent overloading by organising the materials in sub-items as part of the whole lesson. Importantly, the relationships or holistic map should be provided. Summaries or lessons can be offered by using information maps, through the various software available.

Higher-level learning must take place through real-life information by means of applying, analysing, synthesizing and evaluating strategies in order to facilitate deep processing of information.

As individuals differ from one another, a variety of learning strategies must be used to suit the different learning styles of students that are suited to their different learning environments. This is an important point, especially in the South African context, where huge differences exist between the different cultures and the vast majority of languages that are found (Ko b, 1984:20).

Blended learning can cater for individual differences by determining the learners' preferences of what they are interested in. Adults prefer a certain way in processing information and have a particular mode of thinking, remembering or problem solving. A learner's cognitive style needs to be understood in order to design and develop learning materials (Anderson & Elloumi, 2003:15).

Cognitive models give learners control by supplying them with conceptual frameworks and by relying on both representational and discovery learning. Learning is seen as a developmental process and new knowledge is acquired by focusing on prior experience, knowledge, and expectations through the building of bridges. The previously acquired knowledge base of a learner will determine the level at which newly acquired knowledge is presented. An important feature is metacognition whereby learners must develop the ability to think about thinking, to be consciously aware of themselves as problem solvers, and to monitor and control their mental processing (Learnativity, 2001: [online]).

2.3 Constructivism

Constructivism emphasises the building or construction that occurs when people engage in learning activities. The idea behind constructivism is that people learn better by active engagement in learning and to reconcile new information with previous schemas of stored information (Smerdon & Burkam, 1999:2). Learning is seen as an active process of combining information and constructing a unique mental image through the use of our senses (Bencze, 2003: [online]).

Constructivism is a philosophy of learning based on the understanding of the world we live in according to our own perceptions, experiences, rules and mental models (On Purpose Associates, 2001: [online]). Constructivism is based on the premise that we construct our own perspective of the world, through individual experiences and schema. The learner is prepared to solve problems in situations that are ambiguous in nature (Mergel, 1998:2).

Constructivism is focused on knowledge and what we make of it. Learners do not merely absorb and store information, but make tentative interpretations of experiences (Kenneth, 2003:6). These interpretations are then tested against previous experience and knowledge and tested to make meaning or to be applied (Learnativity, 2001: [online]). Learning is an active process whereby learners construct new ideas or concepts based upon newly acquired knowledge or previous experiences (Hein, 1991:1). Cognitive structures assist learners to transform information, construct hypotheses and make decisions that allow for predictions and applications beyond what has been received. Facilitators of learning should encourage learners to go beyond the given and discover principles themselves (Bruner, 1990:10). In this regard learners must be prepared and willing to engage in learning by the appropriate experiences and contexts of learning. Instruction must be structured and organised for easy interpretation by the learner. Instruction should be designed to facilitate extrapolation and move the learner to new fields of discovery (Bruner, 1990:13).

The construction of knowledge does not take place in isolation, but also embraces the social environment of the learner. The learner constructs meaning and that is learning. Information is not merely absorbed and stored but tentative interpretations are made of acquired experiences (Learnativity, 2002: [online]). Jonassen (1991:28) focuses on advanced knowledge and stipulates that cognitive learning environments can effectively transfer basic skills and assist learners to attain advanced knowledge based on well-defined and available knowledge. Validation of newly acquired knowledge can be done through social negotiations.

In constructivism the natural complexity of a subject is investigated through multiple perspectives. Tasks and opportunities, information resources, support and encouragement are given to learners to let them construct their own version of their perceptions. Computers are ideal tools, as they possess many angles to acquire information. The constructivist approach towards learners is learner-centred. Learners are actively engaged in creating meaning to context. Problem solving, case studies and the creation of meaning are critical in constructivist learning approaches (Dodge, 2001: [online]). These principles support andragogy and outcomes-based education. Rutherford (2001: [online]) explains that learners bring prior knowledge and experience to class and can use this to interact at a level that is appropriate.

As part of outcomes-based education learners are to explore ideas and to construct knowledge that is based on their own observation and experiences (Smerdon & Burkam, 1999:2). Learning is a more open-ended experience in constructivism. Methods and results of learning are not easily measured and learners have different experience of the learning content and environment

(Mergel, 1998:18). According to Dewey (1938) adults should base their knowledge and instruction on previous experiences. Higher order thinking and problem-solving strategies must be incorporated into the learning process through facilitator participation (Smerdon & Burkam, 1999:2).

When applying constructivism in a learning environment certain dispositions are supported by a learner-focussed approach, namely:

- Education should be experienced based. Learners should join theory and apply it practically.
- Learners are individuals and have unique characteristics that should be catered for when planning learning activities.
- The learners' perceptions should shape the curriculum.
- The natural inquisitiveness of learners should be fed and nurtured.
- The learners' circumstances and emotional state should be accommodated.
- A learning environment free from scolding and fear should exist (Kenneth, 2003:6).

Adults have specific needs in learning and want to be actively engaged in learning. Adult learners in conjunction with their respective facilitators of learning, should structure their learning around the achievement of the goals as set by the programs they engage in.

Social interaction, according to Vygotsky, a theorist (who developed a theory on social cognitive development) plays an important role in the development of cognition. Of importance is that students need to interact in blended learning and blended learning carries that potential. Vygotsky refer to this potential for development as the "zone of proximal development". The zone of proximal development (ZPD) refers to the stages that range from the lower limit of what learners know to the upper limits of what the student has the potential of achieving (Kearsley, 2004: [online]). Another theorist, Bandura, adds to the social learning theory of Vygotsky. He emphasises the importance of observing and modelling the behaviours, attitudes and emotional reactions of others. Adult learners learn through interaction from one another through modelling that culminates and act as a guide for action. It is important to note that elearners are motivated to interact with another. An important principle of andragogy is collaboration. The end product is social consciousness (Patsula, 2004: [online]).

An important aspect is that learners must be actively engaged in learning activities and must be supported in reaching their set goals and outcomes. In blended learning the necessary guidance and support can be made possible through many interactions between facilitators and learners, and between learners and learners. The aim is to move the learner from the lower level to the upper levels of their zone of proximal development. All the technologies in blended learning and support structures can be used to move the learner to upper levels and in doing so, a level of independency is systematically reached. Social interaction is required to reach full cognitive development and is only restricted to a certain range at any given age of the learner (Patsula, 2004: [online]).

Radical constructivism is an unconventional approach to the problem of knowledge and knowing. It assumes that knowledge is found within the mind of a person and that the construction of knowledge is based upon previously acquired experience (Anonymous, 2004: [online]). Radical constructivism is built on two principles according to Bodner and Geelan (2004: [online]). Knowledge is not passively received and is actually built by the individual. Cognitive organisation takes place and meaning is assigned to the activity. The emphasis falls on discovery learning, learning in complex situations, learning in social contexts and distrusting systematic evaluation of educational outcomes. Radical constructivism has many similarities with andragogy and outcomes-based education, *inter alia* that learning is an active process and the learning-teaching process is interactive. Blended learning requires learners to be interactive.

Radical constructivism postulates that knowledge is personally constructed through socially accepted and shared notions through active engagement. Different perspectives are found in solving problems as individuals experience and understand knowledge through their own perceptions. Facilitators of learning have to facilitate and guide learners to organise learning materials according to their personal schema. An important feature is that facilitators must allow learners to create the knowledge they need. Interaction between learners and learners, and learners and facilitators are encouraged. Skills are developed and improved through active engagement (Boudourides, 1998:1).

In the application of learning principles according to Vygotsky (1978:15) learning is a collaborative and social activity. The educator acts as facilitator and guides the learners to construct their own understanding of the learning situation and content. Learning is seen as a process. The zone of proximal development can be used to design appropriate learning situations and act supportively for optimal learning. Learning must take place in situations and contexts that are meaningful and integrated. All experiences should be linked to learning activities to bring about a sense of oneness between the learner, his/her environment and the community by keeping the educational level of the learner in consideration. Vygotsky viewed this process as a lifelong process that is dependent on social interaction.

Knowledge, according to constructivists, is “what we make of it”. Learning should have meaning, must have actions involved, be lasting and become a working knowledge of culture. Basic skills can be transferred to assist learners attain advanced knowledge, provided that the information is available, well defined and the learner is able to process such information (Learnativity, 2001: [online]).

Constructivists focus on situated learning that is contextual in nature. Learners are active participants in the acquiring process and learning is learner-centred. Instructors are facilitators in the learning process rather than transporters of knowledge. Skills, attitudes and values are essential components in reaching the desired outcomes of lessons presented and improving the learners' ability to adjust to the new way of constructing his own knowledge (Ally, 2004:18).

Blended learning learners are active rather than passive, performing meaningful activities resulting in meaningful activities of high-level processing, that facilitates the establishment of knowledge and personalized learning. Constructivists in blended learning, like Ally (2004:19) has developed learning materials and designers, focus on the following aspects:

Learning should be an active process whereby learners should acquire and interact with information on a practical level.

Learners should construct their own scheme of knowledge, rather than being passive receivers thereof. First-hand experiences of informal materials presented lead to opportunities to contextualise and personalise information.

Real life experiences, collaborative learning and cooperative learning should be facilitated through constructivist learning approaches and the application of metacognitive skills. Adult learners can share in each other's life experiences. Learners with equal strength levels can be grouped to encourage cooperative learning.

Learners should accept responsibility and be autonomous in the learning process. They should be given control and make their own decisions in acquiring materials to reach the desired goals or outcomes as expected.

Time and opportunities must be given in order for learners to reflect and internalise information in order to discover relevance and meaning.

Learning must be meaningful to learners. Adults' study materials should be relevant and meaningful. Designers should choose meaningful activities.

In this section an overview of three main theories of learning was offered to provide an educational framework for understanding andragogy. The implications and applications of these theories to blended learning were also discussed. To understand how adult's function and fit the learning profile, a definition of the term *adult* is explained, followed by a more detailed exposition of the concepts andragogy and andragogical principles that could serve as benchmark for blended learning.

The above literature explained the importance of the learner in the different constructivist approaches to learning. It is important to see the learner as central in the learning process. The next section focuses on aspects, terminology and characteristics of adults as learners.

3. AN EXPLANATION OF THE CONCEPT ADULT AND THE UNIQUENESS OF ADULTS AS LEARNERS

3.1 Adult

It is important to understand the term 'adult', because adults are the learners referred to in study and are usually involved in blended learning programmes at the Central University of Technology, Free State. The current transformation in higher

education caused by economic situations, changing learner demographics and the influence of information technology, indicate a rise in enrolments of adults in higher education institutions. Higher education institutions have to rethink teaching strategies, approaches and methods to deliver quality education (Ryan & Serdyukov, 2003, [online]). In this section I shall discuss the concept *adult* and how it is related to blended learning.

Knowles (1998:57) defines an adult according to four criteria. The first is biological: an adult is a person who has reached the age of reproduction early in adolescence. Secondly, according to the legal definition, a person is an adult when the law states that he/she can vote, obtain a driver's licence and marry without consent. The social definition of an adult is that the person adopts adult roles such as that of a spouse and parent. The psychological definition claims that adulthood starts when a certain psychological view or perspective is arrived at – this is the stage when self-direction and the awareness of taking responsibility for one's own life are established. From the viewpoint of learning, the psychological view of an adult is the most important and forms the basis of andragogy as theory of adult learning.

3.2 The uniqueness of adult learners

It is clear that adults learn and should be taught differently from children (Sipe, 2001:88). The learning style must correspond with the individual learner's level of development. The motivation, capability, experiences and skills all play a major role in the way in which learners should be taught (Merriam & Caffarella, 1991:306). Adults have been out of the educational system for a while, and are quite different in their approach to the formal educational environment. Methods need to be adapted and skills must be upgraded in order for learning to be successful (Rodgers, 1996:76; Olivier, 1998:37).

Learning is voluntary and involves making individual decisions (Rodgers 1996:77). It implies that some form of change is taking place in the individual. This means that a change in behaviour is associated with this process. However, not all changes mean that learning is taking place. Learning is active, and not a mere passive acquisition of knowledge and skills. It also implies a personal approach and differs from individual to individual (Rachel, 2002:214).

3.3 Dynamics of adult learning

The domain of all learning includes the acquisition of attitudes, knowledge and skills. Lewin (1935), Bloom (1956) and Gagné (1972) all agree that learning is very complicated and encompasses motivation, skills, understanding and interest. It is also their opinion that a clear distinction exists between learning as cognitive domain and learning as affective domain (Rodgers, 1996:78; Olivier, 1998:37).

Learning does not only occur in classrooms but in the everyday environment. Unfortunately learning and education are easily confused. Lifelong learning is continuous with or without help from others, whilst education involves learning. Not

all learning is educational or valuable. Learning happens all the time while people are conducting their daily affairs (Olivier, 1998:37).

Learning co-exists with experience. The social and physical environments steer and act as background to learning. Learning is personal and individual with the social and cultural background acting as guides in and barriers to the gaining of knowledge. Most of this learning is unintentional, although much learning takes place as a result of deliberate intention e.g. posters, television and pamphlets. Reaching goals acts as focus to stimulate the individual towards focusing his/her attention on that particular goal (Rodgers, 1996:80).

Adults are usually self-directed learners and their purpose is short-term as well as long-term goals that need to be achieved. In fulfilling such goals, the aim is to solve particular problems and to reach a specific goal. From these goals conclusions are made and implemented. Learning is specific in nature. The aim is to relieve pressure and to find immediate and particular solutions that will yield results in the short term, and not necessarily in the long term or in general (Rodgers, 1996:85; Olivier, 1998:37).

Having provided a general background to adults and the uniqueness of adults as learners, a more detailed discussion of andragogy now follows.

4. ANDRAGOGY

Andragogy is defined as “the art and science of helping adults learn”. An important focus of andragogy is that education is learner-centred (Knowles, Holten & Swanson, 1998: 64). Van Enkevort (in Long, 1991:74) defines andragogy as “ any intentional and professionally guided activity that aims at a change in adult persons”. According to Jarvis (1990: 22) various definitions exist and andragogy in Holland means the overall study of social work, community organisation and adult education. Gravett (2000:65) adds that “andragogy” is often used as synonym for adult education. Andragogy as concept is sometimes used as formulated in a theory or as a set of assumptions and guidelines or hypothesis for adult education practice.

Conner (2003: [online]) defines andragogy in a broader context and refers to learner-focussed education for people of all ages. Merriam (1998:10) adds that andragogy is based on the assumption that adults are self-directed, want to learn and grow out of a need. This needs stem from their unique and personal experiences gained during their development. In addition, Burge (1998:4) describes andragogy as a process of adult learning. Andragogy is the name given to a teaching process designed for the adult learner and the adult education educator. In such situations learning should be problem-centred and the instructor a facilitator of learning instead of a transporter of knowledge (Hiemstra, 2003: [online]).

The following section will focus on adults as learners and why the facilitators of learning must take cognisance of when developing or presenting blended learning.

Andragogy has a direct bearing on how educators in blended learning should approach learners (compare Ryan & Serdyukov, 2003, [online]). Adult learners are seen as differentiated learners. Andragogy places the learner as central focal point in the learning process and emphasizes the self-directedness of adult learners (Merriam, 2001:5).

Adults, according to Knowles (1990:63), need to know why they learn something and how this knowledge will assist them personally or professionally. Learning or the knowledge required will improve the quality of their lives, will make a contribution to the work they are doing as adults. This need-to-know aspect focuses also on what adult learners see as essential components; of how the information learned is linked with real life and the life they are living. It promotes internal motivation and leads to success or qualifications that in turn will bring more motivational aspects to the fore. These achievements will lead to an improved self-concept that will lead to self-direction and independence. Learners develop a self-directed approach to learning and will move away from the dependency on educators. A learner who has achieved this status also applies and utilises his own learning experiences and that of others to be more independent. This feeling of independence improves motivation and vice versa. It assists the adult learner to be ready to assimilate more difficult tasks and promotes his/her readiness to approach new tasks and assignments and to explore the unknown, because a solid basis and array of knowledge empowers him/her to do so (Knowles, 1990:60).

The andragogical model (Merriam, 2001: 5) is based on several assumptions. Adult learners, like children, need to know why a particular area of learning is addressed or not. Another important feature is that they must know what gain or compensation is associated with the task before it will be completed. For adults, the benefit of most learning lies in the knowledge they gain and how this can help them, or in how it can be applied. At school, children usually learn because they will receive marks, get a diploma or because they are rewarded in some other way (Carlson, 2003: [online]). A learner-focused model of teaching, aimed at real-life applications is supported by the assumptions of andragogy. Another important distinction is that adults are often motivated internally (Knowles, 1993:58; Rutherford, 1999: [online]).

An andragogical approach, according to (Ryan & Serdyukov, 2003, [online]), requires learners to be actively involved in learning. The learner determines the time, place and pace of learning. Children do not have the vast learning experiences that adults are likely to have, and the latter therefore bring a vast amount of life experiences into the learning environment. Adults are needs focused in their seeking of learning and the programs they enrol for. This last point has an enormous influence on the motivation of adult learners, because they select their own learning programs (Slotnick, Pelton, Fuller & Taylor, 1993: 6).

5. THE DIDACTICS OF ANDRAGOGY: THEORY TO PRACTICE

The focus of didactics is the particular instruction used in particular subjects (or fields of study) to assist in the process of learning (Fraser *et al.*, 1993:6). Didactic activities related to education focus on activities of teaching and learning that are

directed at a person's mind and cognition in his/her quest towards knowledge. The aim of all learning is to present learning content in such a way that the learner obtains knowledge and skills (Terehoff, 2002: [online]). Once these are acquired a learner will become competent in obtaining, interpreting and using knowledge and skills in order to become mature. Didactic activities take place in different didactical situations, characterised by learners' needs and expectations. Adults learn because they want to (Fraser *et al.*, 1993:9).

The main aim of the didactics of andragogy is for educators to know how to help a learner learn. The main assumption is that andragogy is not determined by the need for a theory of teaching but rather one to facilitate learning. Gagné (1972:19 in Cross 1981) adds to this by implying that andragogy is closer to a theory of learning than to one of teaching. Andragogy focuses on the education of adults and what can be done to help adults learn. In short, the most important issue is that andragogy identifies characteristics of adult learners and has gained the attention of practitioners who are concerned with investigating avenues for pursuing this theory.

It is important to develop a framework to facilitate adult learning. Andragogy lends itself to the adding of value and to helping adults learn. According to UNESCO (1998) a call has been made to restructure the existing system of education, to develop all educational potential to its fullest and to develop learners into self-directed learners who would serve their own education better (Sipe, 2001:87). This calls for adults to be lifelong learners and to pursue all aspects of self-fulfilment. This new focus must be implemented as we are living in a technology-driven society that changes rapidly. In order to survive one needs to stay in touch and keep pace with development and changes. Andragogy is an ideal way of assisting learners to acquire skills to empower them to keep up with the progress to be made (Cross, 1981:259).

To achieve certain goals or expected outcomes, educators must set effective outcomes to be achieved. These outcomes will vary amongst learners and planning is essential in order to achieve these goals. Andragogy has raised much awareness that a need has arisen for the separate and enhanced provision for adults as learners, and the fact that the focus should be on outcomes for adults rather than those methods used to educate children (Thorpe, Edwards & Hanson, 1993:6).

The following two sections contain a discussion of principles that need to be incorporated into the framework for blended learning, as they are the assumptions that andragogy is based upon.

The following discussion will further clarify the central assumptions of an andragogical approach to learning.

5.1 Informed learners

Adults need to know why they need to learn something before starting to learn it. Many learning activities reside within adult learning and learners themselves

(Gravett, 2000:65; Merriam & Caffarella, 1991:249). Adult learners also interact more during group discussions, simulation exercises, problem-solving activities, case studies and laboratory methods. Peer-assisted activities should also form part of the adult education programmes. Adult learners come to learning activities with their own ideas, mindsets and ideologies (Caffarella, 1994:24). Adults tend to be more successful if they assist in planning a learning activity (Hiemstra, 2003: [online]). Learners who engage in an andragogical way of learning will find their self-identity much sooner in life and will also show more maturity within a shorter period of time (Knowles, 1993:60; Knowles, et al., 1998:64).

Adults focus their attention on life situations that have meaning and that apply to themselves. These problems are either task- or problem-centred. Adults will learn whatever that will assist them to do something better, or to bring about an improvement in their lives. New ventures are also undertaken to improve life situations that are applicable to life contexts and real-life situations (Knowles, 1993:60; Rutherford, 1999: [online]; Knowles et al., 1998:64).

Adult learners participate voluntarily according to their own needs. Knowles (1990), in Rodgers (1996:60), claims that adulthood is attained at the point of time when a person sees him/herself as self-directing. The social climate or culture plays an important role in this respect. For example, in some cultures women are deprived of access to education. It is important that the educational process should coincide with the process of reaching maturity. Learning is hindered if adults are treated like children in their endeavours to learn (Merriam & Caffarella, 1991:87). Adults who feel like children in the classroom tend to be rather passive and show less security in as far as their responsibility and goals towards their own learning process are concerned (Rodgers, 1996:60; Knowles et al., 1998:64).

Adults question new knowledge as they compare it with experiences and knowledge previously acquired. If mistakes have been made adults can rectify them. Adult learners can also assist each other as they can all benefit from each other's learning experiences. This will not only bind group members more strongly together, but will enrich each adult learner taking part (Rodgers, 1996:65; Rutherford, 1999: [online]).

5.2 Self-concept and taking responsibility

The self-concept moves from educator dependence to self-direction in the learning process. Adults have a self-concept of being responsible for their own environment and destination in life (Merriam & Caffarella, 1991:249). The self-concept needs to be developed to reach self-actualisation. In doing so a move away from dependency needs to be followed (Knowles et al., 1998:64). As a person matures, the self-concept moves away from learner dependency towards self-direction (Gravett, 2000:65).

Adults need to be seen by others as independent and treated as being capable of self-direction (Knowles, 1990:20). Merriam (1998:7), referring to Knowles, views the andragogical learner as one who is autonomous, free and growth-oriented. Guffy (1998:426) points out that the learner should take responsibility for his

learning. The instructor merely facilitates the learning process. The learner together with the facilitator must devise a plan, for meeting course objectives from the perspective of the needs of the respective learner. The instructor becomes a facilitator and is not merely a disseminator of knowledge (Caffarella, 1994:24).

According to Billington (2001: [online]) adults grow significantly in learning environments that they want to be in. Adults must engage in projects that reflect their interests. They need to be autonomous and self-directed (Lieb, 2001: [online]) in order to reach their goals.

5.3 Self-directed learning

Meredith (1989:1), referring to Knowles (1975), describes self-directed learning as “a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes”. Knowles (1990:31) explains that the educator has to get the learner to engage in a process of mutual enquiry. The end result should be the transmitting of knowledge and the evaluation or conformity of acquired knowledge. The individual is engaged in collaborative, self-directed inquiry in self-actualising situations (Knowles, 1990:174; compare Ryan & Serdyukov, 2003, [online]).

Knowles (1990) supported the idea that learners become increasingly self-directed as they develop as learners. The learner must accept responsibility for his own learning (Merriam, 2001:5). In self-directed learning the learner controls both the learning objectives and the means of learning. Self-directed learning embraces the elements of lifelong learning (Meredith, 1998:1). When a learner decides what should be learned, who should learn, what methods and resources should be used, and how the success of the effort should be measured, then that learning is defined as self-directed learning. Self-directed learning is attempting to empower learners with new skills, knowledge and attitudes. These principles form the core elements of outcomes-based education and place the learner as central in the learning process (Meredith, 1998:2).

An important element is that not all adults prefer self-directed learning, as it requires independence, confidence and resources. In blended learning learners are always assisted in the learning process through email or other technologies. The function of adult educators is “to assist adult learners in a way that enhances their capability to function as self-directed learners” (Mezirow, 1985:137). Instructional strategies can be applied to ascertain the level of self-directedness of a learner and then the instructor can provide the required support. The goals and processes to be involved for each learner to become self-directed are determined by educational level, creativity, learning style and readiness of the learner (Merriam, 2001:10).

Self-learning is an essential component of adult education. Research has shown that adults are very capable in acquiring skills, knowledge and self-insight when engaging in learning activities (Karp, 1996:1). According to Rutherford (1999: [online]) adults need to be self-directing and move away from authority-orientated,

formal and competitive techniques and engage in collaborative learning environments.

5.4 Experiential learning

Adults have a reservoir of experience and rely on this previous learning to draw for their learning (Knowles et al., 1998: 64; Merriam & Caffarella, 1991:249). Adults have accumulated many experiences and adults in themselves become a rich source for learning (Gravett, 2000:65). Learners must connect learning that is relevant and influenced by previous experiences (Caffarella, 1994:24). Theories and concepts must be related to learners and recognise the value of experience in learning (Lieb (2001: [online])).

Adults change and develop continuously and adapt to new life and work experiences; they need to adapt to their circumstances. Educators must realise this and adapt their educational techniques accordingly. Thus, continuous learning forms the basis of adult learning (Rodgers, 1996:61).

As pointed out previously, adults also have vast amounts of experiences that they bring into the class. They can use their previous skills and knowledge to lead them to the understanding and acquisition of new knowledge and insight into such knowledge. Constant feedback is given to enrich the whole class (Rodgers, 1996:62; Rutherford, 1999: [online]).

5.5 Readiness to learn

Adults are motivated in order to perform tasks they need to know about in order to cope and handle real life situations in a real life context (Knowles et al., 1998:64 and Merriam & Caffarella, 1991:249). As a person matures, readiness to learn is focussed at his or her own development tasks and social roles to be performed (Gravett, 2000:65). Adults engage in learning and know what goals they pursue (Caffarella, 1994:24). Classification and objectives of programmes must be clear and done early in programmes. This requires an outcomes-based approach to learning (Lieb, 2001: [online]). An important aspect for facilitators is to allow learners to engage in learning when they reach certain developmental levels. Learners will master learning content when they are ready to assimilate such information (Knowles, 1990:58).

5.6 Real-life applicability

An adult's working environment requires tasks to be performed. Adults learn to perform their tasks better in order to solve problems at work (Merriam & Caffarella, 1991:249). Different situations require different solutions and problems to be solved (Knowles, et al., 1998:64). Billington (2001: [online]) describes adult learners as autonomous. They want to design individual learning programs in order to function optimally in their profession. Adults' orientation towards learning becomes less subject-centred and increasingly problem-centred as it has a direct influence on quality of life. Adults (Gravett, 2000:65) pursue immediate responses

and availability of information. Adults need to find immediate solutions to their problems (Caffarella, 1994:25).

According to Lieb (2001: [online]) adults must see a reason for learning something. Adults will choose subjects that are of interest to them. Adults prefer subjects that have a connection with or are related to work. Familiar settings contribute to a positive and learner friendly environment.

5.7 Motivation

Internal motivation is the strongest in adults. The strongest motivators are self-confidence and cultural influences (Merriam & Caffarella, 1991:249). External motivators play an important role but are secondary (Knowles et al., 1998:64). Adult learners are motivated by internal pressures (quality of life, job satisfaction and position) in order to cope with real-life situations (Gravett, 2000:65)

Developing countries focus on motivation in relation to the education of adults. Less consideration in industrial and professional development programmes (specifically in the West) has been given to the motivational aspect in educating adults. As educators we accept that adults should be motivated, ready to learn and have insight in their studies. Mostly this is not the case: adults also need to be guided, motivated and assisted in their learning (Rodgers, 1996:87).

Many adult programmes focus on the understanding of the 'self' and are learner-generated. Adults and their environment change continuously while the environment of children changes slowly; the setting children find themselves in is fairly stable. More should be done in adult education and learning to prepare adults in order to make their learning experience a creative, evaluative and self-fulfilling experience (Caffarella, 1994:24). However, levels of needs must be satisfied in full so that motivation can be encouraged in the reaching of self-actualisation. Howle (1961), in Rodgers (1996:90), sees motivation as "being related to goal-orientation or process-orientation or subject-orientation that compromises the inherent learning drives of the individual" (Rodgers, 1996:90).

Motivation of any person must be seen in relation to the person's specific situation. Herzberg (1972), in Rodgers (1996:91), explains that the setting (time, place and space) influences motivation that in turn has a direct effect on the internal drive to reach a particular goal.

Motivation in learning strongly depends on the learning situation as well as the learner. Educators must realise the vital role they play in extrinsic motivation. New kinds of drives should be used in order to support learners while learners should start accepting responsibility for their own learning, exercise more imagination and show more creativity and ingenuity (Rodgers, 1996:92; Knowles et al., 1998:64; Lieb (2001:[online]). Merriam & Caffarella (1991:85) provides six factors that serve as sources of motivation for adult learning.

- Social relationships: to make new friends and associates.

- External expectations: to comply to authoritarian recommendations and expectations.
- Social welfare: to improve ability to serve mankind.
- Personal advancement: to achieve higher status and eliminate competition.
- Escape/Stimulation: to relieve boredom and engage in new activities.
- Cognitive interest: to satisfy an enquiring mind towards self-fulfilment.

The motivation of adults to study may be restricted, as their many responsibilities must be balanced against the demands of learning. The best way to motivate adult learners is to enhance their reasons for enrolling in educational programs and to minimise the barriers that prevent them in doing so (Lieb, 2001: [online]).

5.8 Transformational learning

One concept that can be used to summarize adult learning is 'transformational learning'. Transformational learning has at its theoretical base the transformation of the individual through learning. This process of transformation can occur suddenly and can be a powerful experience. The change within the individual to transform and change his/ her world is based not on information added to existing knowledge, but focus on changes on "**how we know**" instead of what we know (Baumgartner, 2001:15). Through empowerment and new knowledge learners can transform their world and environment (Baumgartner, 2001:15).

It is clear that adult learners should be empowered. Knowledge is available for the person who wants to find it. In this light, new experiences are characterised by interpretations and reinterpretations of what is discovered (Mezirow, 1991:170). Rational thought and reflection make up the recursive process referred to as perspective transformation. After experiencing a "dilemma" people engage in critical reflection and re-evaluate their circumstances. In doing so a realisation of inconsistency in the truth takes place. Transformation learning takes place as the learner changes or transforms his/her inconsistent schema that includes beliefs, values, habits and rules for interpreting experience and changes (perspective transformation). New perspectives are discussed with peers to obtain consensual validation. Once the learner achieves this stage, action needs to be taken for transformation and implementation (Mezirow, 2000:11). Social interaction is an important concept as the learner is an affective, emotional and social human being and learning seldom takes place in isolation.

According to Mezirow (2000:28) learners are continually developing. The transformational learning process is intuitive, holistic and contextually based. Learning has to take place in a safe, open and trusting environment. A move away from authoritarian action by the instructor is required. Learners must be more participative, collaborative, explorative and be allowed to be critical by giving regular feedback in situations where learning takes place. Facilitators of learners need to ensure that interrelationships between learners and learners, and between facilitators and learners exist. Learning must be seen as a mutual responsibility, to achieve the respective outcomes (Saavedra, 1995:124).

6. SUMMARY

This section focussed on andragogical assumptions that could form the basis to establish a framework to benchmark blended learning at the Central University of Technology, Free State. Adults are involved in blended learning and higher education and it was therefore important to discuss the characteristics and uniqueness of adults as learners. Adults differ from children in their approach towards learning.

The overview of behaviourism, cognitivism and constructivism in the section pointed towards the unique elements in the learning processes are supportive towards the andragogical principles of learning. Blended learning educators need to take note of the characteristics of adult learners. Adults are self-directed and the principles of self-directedness, experiential and transformational learning, learner-focused education, outcomes orientated learners, individualised learning and motivation for study need to be taken into consideration.

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