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The Need for Including Motivational Aspects in
Formative Evaluation of Adult Learning

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A Thesis

In

The Department

Of

Education

Presented in Partial Fulfillment of the Requirements
For the Degree of Master of Arts at
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ABSTRACT

The Need for Including
Motivational Aspects in Formative Evaluation of Adult Learning

Kevin Chin

Research has shown that individual motivation is a necessary component of adult learning, playing an important role in an individual's positive attitude towards knowledge seeking (Wlodkowski, 1985; Phares, 1991). Individuals who are motivated will be more likely to have a future interest in what they have learned and be more likely to use what they have learned, possibly becoming life-long learners (Wlodkowski, 1985). The rapidly changing economy demands life-long learners who can successfully upgrade their personal and professional skills. Formative evaluation can contribute to realizing this initiative through evaluation of learner motivation and delivering more effective and efficient curricula that meet learner needs.

In order to take into account the psychological and sociological complexities of motivational issues related to short-term classroom-based educational interventions, an Evaluation Design of Motivation and Achievement is proposed. Drawing upon measures of learner motivation and achievement in the form of self-report tests and performance assessment, this formative evaluation design provides guidelines for data collection, data analysis and as well suggests possible motivational strategies and techniques for implementation. By attempting to take into account the psychological and sociological complexities of motivational issues related to an educational intervention, it is argued that this evaluation design has the potential to bridge a gap in learner needs and designed curricula through an emphasis on the interdependent relationship between motivation and achievement in adult learning environments.

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The proliferation of competing articulations, the willingness to try anything, the expression of explicit discontent, the recourse to philosophy and to debate over fundamentals, all these are symptoms of a transition from normal to extraordinary research.   –Thomas S. Kuhn

INTRODUCTION

This thesis presents the case for including motivational aspects in the process of formative evaluation. Through review of the relevant literature, the need for addressing learner motivation in relation to achievement will be outlined, concluding with a proposed formative evaluation design for use in classroom-based adult learning educational interventions. This evaluation design is intended for use in formative evaluation of short-term classroom-based educational interventions involving adult learners. Through on-going monitoring of learner motivation in relation to achievement throughout an educational intervention, limited resources can be targeted for improving instructional strategies through appropriate revisions. Data is gathered using triangulation of written self-report measures of learner motivation, pre/posttest measures of achievement and performance assessment measures.

There are compelling reasons for highlighting motivation in relation to achievement in the adult learning process. First, research shows that the two constructs of motivation and achievement play a cooperative role in learning. Some findings indicate that motivation is consistently positively correlated with educational achievement measures (Walberg & Uguroglu, 1980). Logan (1976) writes of the multiplicative interaction between motivation and learning, where an individual will not perform if either knowledge or motivation is absent. Although the interdependent relationship

between motivation and learning is far from proven fact, many researchers agree to its existence and importance.

Second, the role of motivation in education is imperative for individuals to apply knowledge learned and will be more likely to have a future interest in what they have learned, possibly becoming life-long learners (Wlodkowski, 1985). The rapidly changing economy demands life-long learners who can successfully upgrade their personal and professional skills.

Third, the long-term impact of motivation on society's improvement is essential. Over time it has been found that 29 of the world's wealthiest countries—members of the Organization of Economic Co-operation and Development (OECD)—have increasingly become "learning economies" dependent on the creation and management of knowledge and ideas (Centre for Educational Research and Innovation, 2000). The speed of technological progress combined with the emerging learning economy means rapidly obsolete skills many people. It has been predicted that by 2010 many of today's teenagers will be employed in jobs not yet invented by society (Centre for Educational Research and Innovation, 2000). Claxton states that in order to adapt to the dynamic workforce of the future, individuals will "require a level of knowledge and expertise that cannot be acquired without effort, even by the most able students" (Claxton, in Centre for Educational Research and Innovation, 2000, p.19).

The role of educational evaluation can indirectly contribute to this goal of encouraging competitive life-long learners in this dynamic society. Improving educational interventions through evaluation of learner motivation can help curriculum designers tailor curricula to better meet learner needs. Traditionally, evaluation has taken

place with objective paper-and-pencil tests, the "most common measurement device used throughout the world" (Popham, 1988, p. 88). Although useful due to their reliability and statistical properties, these measures typically did not systematically investigate learner motivation. Patton explains that the prominence of this "quantitative, experimental emphasis, appears to have cut off the great majority of its practitioners from serious consideration of any alternative evaluation research paradigm or methods" (Patton, in W.K. Kellogg Foundation, 1998, p.7). In response to this, Patton (1981) called for an evaluation paradigm of choosing from multiple methods, alternative approaches and the matching of evaluation methods to specific evaluation situations and questions as a necessity.

As a possible example of using multiple methods and alternative approaches in a context of leaner motivation, a holistic, learner-centered evaluation model seems important. As a contribution to the educational goal of encouraging life-long learners, an Evaluation Design of Motivation and Achievement is proposed. This Evaluation Design of Motivation and Achievement is intended for use in formative evaluation of short-term classroom-based educational interventions involving adult learners and is based on Donald Kirkpatrick's goal-oriented "Four-Level Evaluation Model".

Kirkpatrick's work plays a central role in the proposed evaluation design. First, it seems fitting to base this thesis on his "Four-Level Evaluation Model" as it is the most congruent in its formulation with adult education principles (Knowles, 1990). The Evaluation Design of Motivation and Achievement will collect data from each of the four levels as outlined by Kirkpatrick: reaction, learning, behaviour and results. Second, this proposed evaluation design can be seen as continuing an earlier line of work that

Kirkpatrick documented in an article entitled "The training manager and motivation: A review of basic literature." This publication aimed at introducing the reader to basic concepts of motivation with the goal of applying these "general principles of effective motivation to specific problems in training technology" (Kirkpatrick, 1970, p.3). Kirkpatrick (1970) outlined four motivation theories and concluded by advising that the reader "try to understand the best thinking on the subject and follow guidelines that are recommended" (p.6).

This Evaluation Design of Motivation and Achievement draws attention to the essential role of motivation in all adult learning initiatives. Curriculum designers and developers cannot assume that learner motivation is guaranteed by learner attendance in an educational intervention. Caffarella and Merriam (2000) indicate that risk lies in the fact that "many adults have come to expect that instructors will take into account their individual needs and desires and may leave programs when these are ignored" (p.57). In order to engage learners in the learning process, curriculum designers and developers should begin their work with both learner motivation and achievement issues in mind. These issues need to be addressed in order to meet learner "...needs and motives for attending [an educational intervention], as well as an economic necessity for adult education programs that operate as profit centers (Caffarella & Merriam, 2000, p.57). This proposed evaluation design hopes to bridge a gap in learner needs and designed curricula by assessing learner motivation in relation to achievement and meeting needs through targeted instructional strategies.

This thesis consists of four chapters. Chapter 1 will present literature addressing issues of adult learning, motivation and program evaluation. Chapter 2 will present a

description for the proposed Evaluation Design of Motivation and Achievement as well as its implementation procedure. Chapter 3 will present limitations of this present thesis and suggests possible future directions for the proposed evaluation design. Chapter 4 will present concluding remarks on this work.

LITERATURE REVIEW

The proposed Evaluation Design of Motivation and Achievement is based on research from a wide variety of fields: educational psychology, adult education, motivation theory, evaluation research and program evaluation. In order to ground the Evaluation Design of Motivation and Achievement in a solid foundation, a review of the relevant literature will be presented. The reader will first be introduced to central concepts of adult learning as a framework for this proposed evaluation design, providing insightful guidelines for how adults operate within a given learning environment. Following that, the construct of motivation will be defined and its link to the process of learning will be presented. The possible origins of motivational problems will be discussed from the perspective of five humanistic theories of motivation as well as from an instructional design standpoint. An overview of evaluation models and their associated data collection methods will be presented to conclude this section. The needs for developing the Evaluation Design of Motivation and Achievement will be addressed later on in the chapter.

Adult Learning

The Evaluation Design of Motivation and Achievement has been developed to target adult learners through acknowledging the importance of motivation and achievement measures related to adult learning. The following overview of adult

education principles will help ground the reader in adult education principles that play a large role in the framework for the proposed evaluation design.

Knowles (1980) explains that much confusion around the term "adult education" exists because it is used with three different meanings, either: (a) the process of adults learning which covers all experiences of adults by which they acquire new knowledge, understanding, skills, attitudes, interests, or values; (b) a set of activities organized by institutions for the accomplishment of specific educational objectives; or (c) "*andragogy*," a movement in the field of social practice. Further exploration of the third meaning of adult education, andragogy, leads to a wealth of information. The following section will look at adult learning from the perspectives of both pedagogy and andragogy.

Pedagogy— from the Greek works *paid* (meaning "child") and *agogus* (meaning "leading"), literally meaning the art and science of teaching children — was the first model of education, based on learner assumptions made between the 7th and 12th century in European monasteries (Knowles, 1996). This model derived from observations of very young children learning very simple skills, usually reading and writing. The responsibility was given to the teacher for making all decisions regarding what should be learned, how it should be learned, when it should be learned and if it were learned (Knowles, 1996). This pedagogical model became more popular in the 20th century when educational psychologists focused their research on children using its principles.

When such principles were transferred to more mature audiences, adult learners were resistant to the prescribed lectures, assigned readings, drills, quizzes, memorization and examinations characteristic of the pedagogical model. Knowles (1990) states that high attrition rates resulted due to adults not fully accepting these pedagogical techniques

because of their "need and capacity to be self-directing, to utilize their experience in learning, to identify their own readiness to learn, and to organize their learning around life problems" (p.55). Knapper and Cropley (1991) further elaborate, explaining that in contrast to children, adults usually have more clearly developed personal goals, more refined ideas about what is useful subject matter and a desire to learn worthwhile knowledge that can be applied to problem-based situations encountered in daily life.

Between 1929 and 1948 the Journal of Adult Education published articles describing adult learning strategies that mostly departed from the prominent pedagogical model as described above. From those offerings, the assumptions of andragogy — from the Greek words *aner*(with the stem andr-), meaning "man, not boy" or adult— resulted:

- The Concept of a Learner–Adults are more independent of others. They are responsible for their own decisions. They want to be self-directed, but expect educators to direct learning.
- The Experience of a Learner–A class of adults will be much more heterogeneous than a class of younger learners, and the older the adults the more true this is.
- Learning Readiness–An adult is ready to learn whenever he says he is ready to learn. The assumption is that an adult is ready to learn when he experiences a need for new information or a need for new or improved skills.
- Orientation Towards Learning–The adult learner is life-centered, task-centered, or problem-centered. An adult will probably not take a class if he doesn't see any use for it or if he won't acquire new knowledge or skills that he can use in real-life.
- Motivation to Learn–The adult is assumed to be motivated both internally and externally. Internal motivation may be related to self-concept or personal recognition, while getting a new job or earning a higher salary is related to external motivation.

The differences between the traditional pedagogical and andragogical model are summarized in Table 1 (Knowles, 1980).

Table 1

Assumptions of Traditional Pedagogy and Andragogy

Regarding:	Traditional Pedagogy	Andragogy
Concept of the learner	The role of the learner is, by definition, a dependent one. The teacher is expected by society to take full responsibility for determining what is to be learned, when it is to be learned, how it is to be learned, and if it has been learned.	It is a normal aspect of the process of maturation for a person to move from dependency toward increasing self-directedness, but at different rates for different people and in different dimensions of life. Teachers have a responsibility to encourage and nurture this movement. Adults have a deep psychological need to be generally self-directing, although they may be dependent in particular temporary situations.
Role of learner's experience	The experience learners bring to a learning situation is of little worth. It may be used as a starting point, but the experience from which learners will gain the most is that of the teacher, the textbook writer, the audiovisual aid producer, and other experts. Accordingly, the primary techniques in education are transmittal techniques—lecture, assigned reading, AV presentations.	As people grow and develop they accumulate an increasing reservoir of experience that becomes an increasingly rich resource for learning—for themselves and for others. Furthermore, people attach more meaning to learnings they gain from experience than those they acquire passively. Accordingly, the primary techniques in education are experiential techniques—laboratory experiments, discussion, problem-solving cases, simulation exercises, field experience, and the like.

Table 1 (continued)
Assumptions of Traditional Pedagogy and Andragogy

Regarding:	Traditional Pedagogy	Andragogy
Readiness to learn	People are ready to learn whatever society (especially the school) says they ought to learn, provided the pressures on them (like fear of failure) are great enough. Most people of the same age are ready to learn the same things. Therefore, learning should be organized into a fairly standardized curriculum, with a uniform step-by-step progression for all learners.	People become ready to learn something when they experience a need to learn it in order to cope more satisfyingly with real-life tasks or problems. The educator has a responsibility to create conditions and provide tools and procedures for helping learners discover their "needs to know." And learning programs should be organized around life-application categories and sequenced according to the learners' readiness to learn.
Orientation to learning	Learners see education as a process of acquiring subject matter content, most of which they understand will be useful only at a later time in life. Accordingly, the curriculum should be organized into subject matter units (e.g., courses) which follow the logic of the subject (e.g., from ancient to modern history, from simple to complex mathematics or science). People are subject-centered in their orientation to learning.	Learners see education as a process of developing increased competence to achieve their full potential in life. They want to be able to apply whatever knowledge and skill they gain today to living more effectively tomorrow. Accordingly, learning experiences should be organized around competency-development categories. People are performance-centered in their orientation to learning.

Note. From The modern practice of adult education: From pedagogy to andragogy (pp.43-44) by M.S. Knowles, 1980, Chicago: Follett Publishing Company.

In addition to differences in learning styles, the traditional pedagogical and andragogical assumptions also indicate differences in design considerations (Knowles, 1990). Pratt and Nesbit (2000) state that the andragogical model has been an example of shifting from content/teacher-centered education to that of learning/learner-centered education. The andragogical model is a process model that deals with the following seven elements:

- Establishing a climate conducive to learning
- Creating a mechanism for mutual planning
- Diagnosing the needs for learning
- Formulating program objectives (which is content) that will satisfy these needs
- Designing a pattern of learning experiences
- Conducting these learning experiences with suitable techniques and materials
- Evaluating the learning outcomes and rediagnosing learning needs

Knowles (1991) elaborates on the difference between the design assumptions of pedagogy and andragogy by saying that "the difference is not that one deals with content and the other does not; the difference is that the content model is concerned with transmitting information and skills whereas the process model is concerned with providing procedures and resources for helping learners acquire information and skills" (p.120). These andragogical design assumptions vary a great deal from the pedagogical assumptions that are typically applied to children. While children traditionally learn in a climate that is formal and controlled by the teacher, the adult learning climate is characterized by an collaborative, informal atmosphere. Traditional pedagogy sees the teacher as responsible for planning, diagnosing needs, formulating objectives and evaluating. The andragogical design assumptions see the learner involved in those same aspects, with little responsibility on the instructor for those activities. A comparison of these assumptions and designs of pedagogy and andragogy are presented in Table 2.

Table 2

A Comparison of the Assumptions and Designs of Pedagogy and Andragogy

	Assumptions			Design Elements	
	Pedagogy	Andragogy		Pedagogy	Andragogy
Self-concept	Dependency	Increasing self-directiveness	Climate	Authority-oriented Formal Competitive	Mutuality Respectful Collaborative Informal
Experience	Of little worth	Learners are a rich resource for learning	Planning	By teacher	Mechanism for mutual planning
Readiness	Biological development Social pressure	Developmental tasks of social roles	Diagnosis of needs	By teacher	Mutual self-diagnosis
Time perspective	Postponed application	Immediacy of application	Formulation of objectives	By teacher	Mutual negotiation
Orientation to learning	Subject centered	Problem centered	Design	Logic of the subject matter Content units	Sequenced in terms of readiness Problem units
			Activities	Transmittal techniques	Experiential techniques (inquiry)
			Evaluation	By teacher	Mutual re-diagnosis of needs Mutual measurement of program

In addition to these design considerations, the differences between traditional pedagogical and andragogical assumptions indicate an important difference in learner motivation. Traditional pedagogy sees more extrinsic motivations coming into play while andragogy sees many intrinsic and extrinsic factors affecting the quality of the individual's education. For example, in adult learning intrinsic motivation stems from self-directed behaviours or increased self-esteem while extrinsic motivation originates from a higher salary or new job. These intrinsic and extrinsic adult learning motivations are valuable and point to the possibility of evaluation playing a dual assessment and motivational role in their education. Drawing upon the assumptions of self-directedness and the importance of learner's experience, a beneficial evaluation method could incorporate the following components that could help increase motivation: 1) allowing adult learners to decide personal objectives (intrinsic) and 2) creating an environment where real-life tasks or problems are presented for the adult learner to negotiate (extrinsic). The design considerations of climate-setting, planning, diagnosis of needs, formulation of objectives, design, activities and evaluation for adult learners are important for the proposed evaluation design that will be presented in chapter 2.

Motivation

Motivation Defined

One of the important assumptions of the andragogical model is that individuals are both internally and externally motivated. This subjective, hypothetical construct, is defined in various manners. Logan (1976) offers the simple definition of motivation as the energizer of behavior or use of knowledge. Keller (1979) defines the term as "that which accounts for the arousal, direction, and sustenance of behavior" (p.27).

Psychologists explain the construct as "the processes involved in arousing, directing, and sustaining behavior" (Ball, 1977, p.2). Wlodkowski (1985) breaks down motivation by illustrating its sequential pattern as:

Energy ➔ Volition ➔ Direction ➔ Involvement ➔ Completion

Among various definitions of motivation, three common characteristics of the construct exist. It: (a) energizes the organism—makes it active in carrying out a behavior; (b) directs the persistent activity of the organism—when a stimulus is perceived, how long the individual will orient to the incentive; and (c) selects activities—it defines the consequences of responses, consequences that affect the future behavior of the individual (Wlodkowski, 1978).

The Interaction of Motivation and Learning

Over 20 years ago, Keller (1979) stated that there was inadequate attention given to both the understanding of motivation in learners and the development of a technology for influencing motivation. Only in the past two decades has research in the area of motivation been systematically analyzed for its interaction on learning (Reigeluth & Curtis, 1987). Review of the literature shows that a variety of opinions exist regarding the relationship between the construct of motivation and learning (Reigeluth & Curtis, 1987).

Many theorists and researchers see motivation as a focal point of learning where the latter is defined as a "relatively permanent process resulting from practice and reflected in a change of performance" (Logan, 1976, p.2). Motivation plays a role in affecting practice, an important step in the process of learning: if motivation is poor so

that practice is done in a haphazard and incorrect manner, then the response learned is haphazard and incorrect (Logan, 1976). This example indicates how "motivation is partly responsible for what is experienced and in this way is indirectly responsible for what is learned" (Logan, 1976, p.175).

Brown emphatically states that "there is an undeniable relationship between learner motivation and achievement" (Brown, in Rothwell & Kazanas, 1992, p.255). Ball (1977) essentially agrees with this view, stating that the construct of motivation is central in any educational theory. Interestingly, work by Atkinson (1978) quantifies the relationship of motivation to learning, stating that motivation makes up 75% of achievement, where "the partition of variance in cumulative achievement is: 25% to true ability, 50% to motivation for the critical endeavour, and 25% to motivation for alternative activities that also make human life an interesting and intrinsically enjoyable experience" (p.236). Walberg and Uguroglu (1980) add their research findings that motivation is consistently positively correlated with educational achievement measures.

Logan (1976) describes the relationship between learning and motivation in more detail where learning is seen as potential for behavior in the form of habits and motivation energizes these habits into action. The consequent interaction can be explained "mathematically by saying that learning and motivation combine multiplicatively to determine performance" (Logan, 1976, p. 173). This multiplicative interaction has one important property: if either term is zero, the end result is zero. An individual will not perform if knowledge is absent or if motivation is absent (Logan, 1976). Behavior only takes place when some degree of learning and motivation exist and the greater the learning and motivation, the greater the performance.

Wlodkowski (1978) is less effusive about the relationship between motivation and learning, stating that there is no conclusive proof to support the belief that motivation enhances learning, although it appears to be a necessary, but not sufficient, condition for learning. Although Logan (1976) asserts that motivation has no direct effect upon learning, he believes that "motivation is necessary for performance and affects the nature of the performance" (p.175).

A challenge in validating the connection between motivation and learning is that neither is directly observable. Ball (1977) states that the only possibility for gauging motivation is to observe a learner's behavior within a specific environment and infer the individual's level of motivation. Keller states that the closest direct measure of motivation is effort. Individuals work "longer, harder, and with more vigor and intensity when they are motivated than when they are not motivated" (Keller, in Wlodkowski, 1985, p.5). Logan (1976) offers the parallel that learning is also "hypothetical, something inferred from observations of behavior" (p.2). Levin and Long explain that effort spent actively involved in learning is definitely related to achievement (Levin & Long, in Wlodkowski, 1985). Despite the less than concrete connection between motivation and learning, it seems clear that the two are forever connected in mutual interdependence (Logan & Ferraro, 1978).

Although limitless motivation may seem to be a perfect condition for learning, one important caveat to keep in mind is the danger of over-motivating a learner. Although Leshin, Pollock and Reigeluth (1992) state that it "is a waste of time to motivate an already motivated audience," it is unlikely that the whole group of learners is highly motivated from the beginning of the educational intervention (p.100). Judicious

use of strategies is suggested since inappropriate or unnecessary motivational strategies can actually demotivate learners (Leshin et al., 1992). Logan (1976) also mentions this phenomenon, stating that there is an optimal level of motivation for learning, depending on the level of difficulty of the task. Logan (1976) explains that the more difficult the task, the lower the level of motivation that will promote efficient learning. On the other hand, the lower the motivation level, the slower the performance, but the more likely the individual is to take notice of finer details and relationships that might be overlooked by someone over-energized by motivation (Logan, 1976). Wlodkowski (1985) agrees, but believes that it is best for instructors to err on the side of generosity when it comes to encouraging learner motivation and attempt to make "positive motivational influence a continuous stream from the beginning to the end of the learning sequence" (p. 259). In the following section a discussion of the origins of motivational problems will be discussed in order to better understand the underlying issues that affect adult learning.

The Origin of Motivational Problems During Instruction

Many possible origins of low learner motivation exist and as Keller (1979) indicates, such problems might come from within the learner or from the instruction of an educational intervention. When a learner has extremely low motivation they will "not likely be motivated under any set of instructional design conditions until he or she had undergone a behavioral change experience that improved his or her motives or expectancy for success" (Keller, 1979, p.32). This is not very hopeful for the educator, indicating that a learner seemingly needs to be motivated before responding positively to any instructional design strategies and techniques.

Fortunately, not all researchers believe motivation levels are unchangeable. At this point, it is important to present this conceptual distinction between two forms of motivation, that of stable trait and transitory state (Knoll, 1983). Motivation as a stable trait can be illustrated by two examples: An individual who believes learning is worthless and not valuable for him or her can be said to have low willingness to learn. An individual who believes learning is worthwhile and valuable can be said to have high willingness to learn. These two attitudes involve personal values and self-image that persist over time. In contrast, motivation as a transitory state depends heavily on the specific environment of the individual; despite attitudes to behave in certain ways, the individual will inevitably behave according to the surrounding circumstances.

Knoll (1983) contends that educators are better served by viewing motivation as a transitory state. By stating that learner attrition rates depend on value judgements made in a given learning activity, Knoll (1983) fosters the idea that educators can affect change on transitory states of motivation through control of the educational climate. Kirkpatrick (1970) concurs with this transitory state concept of motivation, stating that learner needs can change over time, where one need is satisfied and another emerges.

There are several perspectives to motivational deficiencies that one could take. The two extremes range from: (a) deficiencies from within the learner, where humanistic theories present free will as the foundation for motivation to (b) deficiencies from the instruction, where environmental theories based on conditioning principles and physiologically based drives direct motivation (Keller, 1979). Both these views are important within the andragogical framework as possible origins of motivational problems for learning. In order to discuss possible motivational problems within the

learner, a select number of humanistic theories will be focused on below in order to acknowledge the intrinsic characteristics of independence and heterogeneity within the adult learner. Maslow's theory of Self-actualization will be summarized, followed by Bandura's theory of Self-efficacy, Rotter's Internal-External Locus of Control theory, Weiner's Attribution theory and McClelland's Achievement Motivation theory. In order to discuss possible motivational problems from the instruction, instructional design strategies that acknowledge the extrinsic importance of the environmental impact on motivation will be covered. Keller's ARCS model will be discussed first, followed by Wlodkowski's Time-Continuum Model.

<u>From Within the Learner</u>

<u>Self-actualization</u>. Defined by Maslow (1970), self-actualization is an individual's desire for self-fulfillment, a "tendency for them to become actualized in what they are potentially" (p.22). These growth needs are most readily met by learning that is intrinsically rewarding (the doing of the activity is in itself satisfying). The need for self-actualization is often present on a full or partial basis in adult learning. "Learning for the sake of learning" is not uncommon among adults. Cross found a range of 10 percent to 39 percent of adults in various surveys who listed seeking knowledge for its own sake as their primary motivation for learning (Cross, in Wlodkowski, 1985). Berlyne (1963) used the term "perceptual curiosity" to refer to motivation that was powered by situations of "novelty, surprisingness and complexity" (p.323).

Tough (1971) found pleasure to be a major reason why adults start learning projects. Although Tough (1971) states this pleasure had many different sources, it frequently included the joy that comes from possession of knowledge, satisfying

curiosity, interesting content, practicing a skill, and spending time in the activity of

learning— all self-actualization-type behaviors. A study conducted by Tough (1968)

found that the motivation for beginning and continuing a learning project was complex.

The reasons given by participants were varied and all revolved around the learner's self-

perception. Penland studied reasons why adults choose to learn on their own instead of

taking a course (Penland, in Wlodkowski, 1985). The rank order of the first four reasons

most often selected is particularly revealing:

- Desire to set own learning pace.
- Desire to use own style of learning.
- Desire to keep learning style flexible and easy to change.
- Desire to put own structure on the learning project.

In step with these four reasons, many strategies for increasing motivation seem to

develop out of these individual desires during learning. In truth, many motivational

techniques that exist derive from adult education principles.

Maslow's theory of self-actualization has implications for the process of learning.

For some people to find self-fulfillment in learning, they need to explore, to be creative,

and to be self-directed. It appears that many adults prefer these elements so strongly that

they opt for independent learning over institutionally guided learning. In order for

individuals to experience their potential and fulfill their potential, basic needs must be

met, such as the desire to know and to understand. Research done by Maslow (1970)

provides support for the desire to know and to understand. Historical analysis shows that

people have "looked for facts and created explanations in the face of the greatest danger,

even life itself" (p.24). Maslow (1970) has also cited research where a defining

characteristic of psychologically healthy people was an attraction to the mysterious, the

unknown, the chaotic, unorganized and unexplained. An interesting corollary was drawn

from his studies of psychopathological individuals, where compulsive-obsessive neurotics were shown to have an obsessive and anxious clinging to familiarity and a dread to the unfamiliar, chaotic, and unexpected. Maslow (1970) concludes that psychopathological effects will arise when cognitive needs are frustrated, drawn from cases where pathological symptoms manifested themselves in "intelligent people leading stupid lives in stupid jobs" (p.24). Those who followed the recommended therapy to pursue stimulating activities showed improvement in their situations.

Self-efficacy. Another one-dimensional theory that deals with motivation is Bandura's theory of Self-efficacy. While Maslow's theory of Self-actualization focuses on motivation as a by-product of natural curiosity, the theory of Self-efficacy theory shifts the focus on motivation as dependent on "the belief that one can successfully execute a given behavior" (Phares, 1991, p. 362). This belief pervades every aspect of an individual's life as it affects behavior, emotions, and motives.

Daily decisions are undertaken through such estimations of self-efficacy. This assessment of individual capabilities is important to gauge correctly: if done incorrectly, an individual will begin a course of action that is highly likely to end in failure. These personal judgments determine behaviors, duration of behaviors and how much punishment is absorbed in carrying out the behaviors (Phares, 1991). Self-efficacy also determines how thoroughly an individual will prepare for tasks and which ones will be selected. In addition, self-efficacy has strong cognitive effects. For example, a person who lacks confidence will dwell on personal inadequacies and judge tasks to be more difficult than they really are. As a result, the chances of failure are increased by this shift in attention to negative influences.

Self-efficacy beliefs affect individuals through cognitive, motivational, affective and selection processes (Bandura, 1992). As illustrated in the example above, cognitive processes can support or detract from individual performance. Setting personal goals is dependent on self-appraisal of abilities and the stronger the perception of self-efficacy, the greater the commitment and effort expended to carry out the behavior. Bandura (1992) states that beliefs of self-efficacy play "a central role in the self-regulation of motivation" (p.18). Most behavior is cognitively motivated, driven by thoughts of success of failure. Three different types of cognitive motivators have been identified: causal attributions, outcome expectancies and cognized goals. Causal attributions are strongly interrelated to self-efficacy beliefs. Research has shown that effects of causal attributions have a direct effect on an individual's sense of self-efficacy rather than a direct effect on performance (Bandura, 1992). Outcome expectancies are based on personal predications of future performance. Individuals who have a strong belief in self-efficacy will expect positive outcomes where those with a weak belief will expect negative outcomes. Personal challenges afford an individual the opportunity to realize self-motivation and self-directedness (Bandura, 1992). Bandura (1992) refers to research that indicates that explicit challenging goals increase and sustain motivation. Motivation also increases with the combination of goals and performance feedback, a cognitive comparison function.

Self-efficacy plays a strong role in an individual's affective state. Bandura (1992) states that beliefs of self-efficacy create "attentional biases and influence how emotive life events are construed and cognitively represented; they operate in the exercise of control over perturbing thought patterns; and they sponsor courses of action that transform environments in ways that alter their emotive potential" (p.24). There exists

evidence that affective states are influenced by self-regulation in the form of anxiety

arousal and depressive moods. Schunk (1989) states that the belief that one is making

progress can enhance self-efficacy. As well, the anticipated satisfaction of accomplishing

the goal sustains motivation through to completion of the task (Schunk, 1989).

Self-efficacy also exerts influence through a selection process whereby individuals

choose environments to be in and activities to engage in. Individuals tend to avoid

situations that exceed their coping abilities and welcome activities that they can handle.

Bandura (1992) states that decisions such as these have a strong effect on subsequent

personal development: influences in any given environment will promote certain abilities,

values and interests long after the decision-making process has ended.

Internal-external locus of control. Adding to the one-dimensional theories of

motivation that focus on the individual, Rotter adds an external component to motivation.

Rotter's internal-external locus of control theory highlights the importance of an

individual's perceptions of control as a motivating factor, defining internal-external locus

of control as the following:

> When a reinforcement is perceived by the subject as following some
> action of his own but not being entirely contingent upon his action, then,
> in our culture, it is typically perceived as the result of luck, chance, fate, as
> under the control of powerful others, or as unpredictable because of the
> great complexity of the forces surrounding him. When the event is
> interpreted in this way by an individual, we have labeled this a belief in
> external control. If the person perceived that the event is contingent upon
> his own behavior or his own relatively permanent characteristics, we have
> termed this a belief in internal control (Phares, 1991, p. 1).

The continuum of internal/external has become widely accepted since Rotter's formal

definition of internal and external locus of control in 1966. This theory explains how

individuals believe the results of their efforts are controlled by external forces and events

while others believe that their own efforts or attributes allow them to control their environments.

From this research, interesting conclusions have been made. Internals are likely to attribute success and failure to themselves, where the former is the result of effort and ability and the latter is due to the absence of these factors (Jonassen & Grabowski, 1993). Externals are likely to attribute success and failure to external forces such as luck, easy tasks and availability of help while failure is attributed to bad luck or unnecessarily difficult tasks (Jonassen & Grabowski, 1993). Research has also shown other marked differences between internals and externals. In terms of reactions to social influence, externals are more likely to be compliant and conforming than internals. When presented with information, externals are more likely to be persuaded and ready to accept than internals.

One of the more noteworthy differences between the two categories lies in information seeking. Internals show greater efforts to acquire information about their environment than externals. Another finding involves the difference in achievement between the two groups. Phares (1991) states with strong conviction that "internality is directly related to achievement behavior" (p.490). Although the magnitude of the relationship ranges from small to medium, more internal beliefs are associated with greater academic achievement (Phares, 1991).

Attribution theory. Weiner's Attribution theory not only borrows elements from the theories above, but adds many new elements that factor into an individual's motivation. Weiner's Attribution theory "considers a person's beliefs about causes of outcomes and how those beliefs influence expectations and behavior," much like

Maslow's belief that curiosity fuels motivation (Alderman, 1999, p.23). Attribution

theory—an elaboration on Rotter's concept of locus of control—assumes that individuals

search for understanding about why events occur, especially when the outcome is

important or unexpected (Alderman, 1999). Research has identified five reasons for

success and failure in achievement activities:

- Ability—Beliefs about competence, skill or knowledge
- Effort—Amount of exertion expended
- Task Difficulty—Beliefs about level of difficulty of task
- Luck—Belief in degree of chance involved
- Strategy—Type of strategy used for learning (added by subsequent research)

Ability and effort are usually found to be the most frequently cited reasons for

success (Stipek, 1988). Weiner (Weiner, in Stipek, 1988) states that "...the specific

causal attributions are less important as determinants of achievement behavior than the

underlying dimensions of the attributions" (Weiner, in Stipek, 1988, p.81). These three

dimensions are:

- Attributions are classified according to an internal-external continuum, much like
  Rotter's internal-external locus of control theory. This refers to whether the cause is a
  factor within the person (ability or aptitude, effort, mood) or a factor outside the
  person (luck, task difficulty).
- The second dimension is a stable-unstable continuum, a new factor to the previously
  mentioned motivation theories. The stability classification refers to whether the
  perceived cause has been a consistent or inconsistent one over time. Unstable causes
  for success or failure are those attributed to temporary or factors that can be modified.
- The third dimension, controllable-uncontrollable continuum is much like Bandura's
  theory of self-efficacy, refers to the extent we believe we have influence or control
  over the cause of an outcome. An uncontrollable factor is luck, whereas effort is
  generally believed to be controllable (Weiner, in Alderman, 1999, p.26).

These attributional beliefs influence emotional reactions, which in turn affects motivation

through changes in feelings such as pride, shame, competence and hopelessness.

Attribution to internal factors produces more pride and shame than does attribution to

external factors (Alderman, 1999). Research has shown that individuals feel more pride

when they attribute success to ability and feel hopelessness when failure is attributed to ability.

Achievement motivation. Altogether different in nature to the previously mentioned theories, McClelland's achievement motivation sees the construct as driven by a sense of competition and need to succeed. Alschuler, Tabor and McIntyre (1970) define achievement motivation (n-Ach) as an individual's expression of "restless driving energy aimed at attaining excellence, getting ahead, improving on past records, beating competitors, doing things better, faster, more efficiently, and finding unique solutions to difficult problems" (p.6). Individuals possessing strong achievement motivation are generally self-confident individuals who set challenging, attainable goals demanding maximum effort. They like to receive regular, concrete feedback on how well they are doing so that their plans of action can be modified accordingly. They take pride in their accomplishments and get pleasure from striving for the challenging goals of excellence they set for themselves.

More specifically, two sets of individuals have been found to exist within this framework: (a) those with a need to succeed and (b) those who have a need to avoid failure (Jonassen & Grabowski, 1993). While the former is oriented towards success and expects to succeed and feel proud, the latter is oriented with anxiety about coping with negative feelings of failure and expects to fail and feel ashamed as a consequence. Alschuler et al. (1970) state that research on achievement motivation training for students provides little evidence for increased grades in school but does show increase purposeful planning and action outside of the school environment. If the ultimate purpose of

schooling is to teach students knowledge, values and feelings that help them live more effective adult lives, n-Ach training supports this.

Atkinson (1978b) states that there are two possibilities to account for low motivation: (a) personality deficiencies or (b) the motive to avoid failure may be too strong and the motive to achieve too weak. When personality is adequate, i.e., the achievement motive is relatively strong, there may be inadequate challenge where the task may be too easy or too difficult for him. Based on n-Ach research, a general six-step sequence in arousing and internalizing a motive has developed:

- Attend: Get students' attention before any learning takes place. This can be done by implementing dramatic settings and unusual methods during instruction that are different from everyday teaching strategies.
- Experience: Have the student experience the thoughts, actions, and feelings comprising the motive in question. This can be accomplished through games, exercises or role-plays.
- Conceptualize: Teach students to clarify the motive by conceptualizing and labeling the components of the motive. Traditional teaching methods for building vocabulary are used in this phase.
- Relate: The relevance of the motive in questions is assessed by examining its relationship to the person's ideal image of himself, his values and the everyday demands of his life.
- Apply: If the person decides to increase the motive, help him practice applying the motive in several real-life simulation to focus on goal setting.
- Internalize: If the motive is to be internalized, the final step is for the instructor to progressively withdraw external support while maintaining the individual's level of voluntary use and satisfaction.

Each of the five humanistic theories presented above has a different approach towards their understanding of motivation. Each theory cites different factors as playing a role in an individual's motivation level. An individual's natural curiosity plays a role in encouraging and sustaining motivation (self-actualization), as does an individual's belief that they can successfully carry out a behavior (self-efficacy). An individual's belief in the extent of external forces versus their own efforts playing a role in their success are

important (internal-external locus of control), as well as the individual's perception of a

cause has been a consistent or inconsistent over time (attribution theory). Finally, the

individual is seen as driven by the desire to attain excellence through competition and

self-improvement through doing things better, faster, and more efficiently (achievement

motivation). All these factors are useful and form the basis for many of the strategies that

encourage motivation that will be discussed in the following section.

From the Instruction

Keller's ARCS model. In addition to the internal factors that the motivation

theories mention above, many researchers view external factors as important as

motivational influences. Instead of focusing on the internal aspects of motivation, Keller

(1979) chooses to affect low learner motivation by concerning himself with motivational

shortcomings in curricula. In adopting this perspective, Keller (1979) states that "students

are assumed to have the basic motives and generalized expectancy for success, but there

are deficiencies in the motivational characteristics of the instruction itself" (p.32). Keller

(1979) indicates that this approach is useful since ineffective instructional techniques are

easier to control than the motivational problems that lie within the individual.

To this end, Keller's ARCS model was developed (Dick & Carey, 1990). This

model grew out of research from "learning theories, environmental theories, attitude

theories, attribution theory, equity theory and cognitive dissonance theory" (Gordon,

1994, p.147). The four attributes of the ARCS model are: Attention, Relevance,

Confidence, and Satisfaction (see Table 3). While focusing on one of these attributes is

not sufficient to enhance motivational instruction, the combination of all four will greatly

increase the likelihood of maintaining a high level of learner motivation (Dick & Carey, 1990).

The first attribute of the ARCS model is *attention*. More specifically, this means gaining the attention of a learner and sustaining it for the duration of the instruction. The suggested strategies made by Keller target an individual's sense of curiosity as advocated by Maslow's self-actualization theory. Using unexpected events in instruction, asking the learner to solve problems and varying the elements of instruction are all ways to gain and maintain motivation.

The second attribute, *relevance*, relates to the learner understanding how the target behavior and skills directly connects to their lives. The strategies outlined by Keller draw upon elements from McClelland's achievement motivation, such as motivation do things better, faster, more efficiently and to find unique solutions to difficult problems. By using concrete examples that are related to the learner's experience and values as outlined by Keller, learning is made relevant to the learner and helps increase motivation.

The third attribute of the ARCS model, *confidence*, relates to the learner's need to feel that they can meet the goals of the instruction. Keller advocates helping learners estimate their probability of success using evaluative criteria, mirroring elements of Bandura's theory of self-efficacy. Keller advocates challenging learners and having them succeed in learning and performance conditions. This strategy borrows elements from Weiner's attribution theory, allowing the individual to any unstable causes for success or failure, indicating any factors that can be modified in the future. Keller's suggestion for

Table 3

Strategies of Keller's ARCS Model

Attribute	Strategies
Attention	• Perceptual Arousal. Gain and maintain student attention by the use of novel, surprising, incongruous, or uncertain events in instruction. • Inquiry Arousal. Stimulate information-seeking behavior by posing, or having the learner generate, questions or a problem to solve. • Variability. Maintain student interest by varying the elements of instruction.
Relevance	• Familiarity. Use concrete language, and use examples and concepts that are related to the learner's experience and values. • Goal Orientation. Provide statements or examples that present the objectives and utility of the instruction, and either present goals for accomplishment or have the learner define them. • Motive Matching. Use teaching strategies that match the motive profiles of the students.
Confidence	• Learning Requirements. Help students estimate the probability of success by presenting performance requirements and evaluative criteria. • Success Opportunities. Provide challenge levels that allow meaningful success experience under both learning and performance conditions. • Person Control. Provide feedback and opportunities for control that support internal attributions for success.
Satisfaction	• Natural Consequences. Provide opportunities to use acquired knowledge or skill in a real or simulated setting. • Positive Consequences. Provide feedback and reinforcements that will sustain the desired behavior. • Equity. Maintain consistent standards and consequences for task accomplishment.

Note. From Systematic training program design: Maximizing effectiveness and minimizing liability (pp. 151-153), by Sallie E. Gordon, 1994, Englewood Cliffs, NJ: Prentice Hall, Inc.

encouraging internal attributions for success draws directly from Rotter's internal-external locus of control.

The last attribute of the model is *satisfaction*, also referred to as reinforcement. This satisfaction can take on many forms: increased salary, job promotion or other types of reward. Dick and Carey (1990) state that the intrinsic satisfaction of the learner should not be overlooked: its importance is equal to or greater than that of any extrinsic reward. In order to encourage satisfaction is learners, Keller suggests providing opportunities to use acquired knowledge in real or simulated settings as well as providing feedback and reinforcement that will sustain motivation. Again, McClelland's achievement motivation theory is drawn upon in making learning relevant to the learner through real or simulated settings and receiving regular feedback allows individuals to change their plans of action to increase success. Elements from Maslow's theory of self-actualization also appear in these strategies, for if learners are satisfied with their learning it will reinforce their intrinsic feelings of joy from possessing knowledge.

Wlodkowski's time-continuum model of motivation. Wlodkowski (1985) draws parallels between the ARCS model and his own Time-Continuum Model of Motivation stating that both aim to achieve the same goal: the "synthesis of many lines of research concerned with motivation in order to integrate numerous instructional strategies into the instructional process for the purpose of enhancing learner motivation" (p. 276). A striking difference between the two models lie in the use of their suggested strategies. While Keller's ARCS model advocates using all four attributes throughout an educational intervention, Wlodkowski's transitory state-based Time-Continuum Model of Motivation suggests specific strategies to use depending on the time of the educational intervention.

Wlodkowski (1978) depicts motivation as having three distinct periods during instruction

(see Figure 1). Rothwell and Kazanas (1992) agree with Wlodkowski (1978) that

different motivational techniques can be incorporated at different times, either at the

beginning, during and/or end of the learning process (see Table 4). Each of these critical

periods has specific individual learner characteristics that need to be addressed. The

"Beginning" critical period sees learner attitudes and needs as its focal point.

Wlodkowski (1978) defines "attitudes" as the learner's attitudes toward the learning

environment, instructor, subject matter and self. "Needs" comprise the learner's basic

needs at the time of learning. The "During" critical period of the intervention sees

stimulation and affect as its focal point. Wlodkowski (1978) defines "stimulation" as the

stimulation processes affecting the learner's experience. "Affect" comprises the affective

or motivational experience of the learner while learning. The "Ending" critical period of

the intervention sees competence and reinforcement as its focal point.

Wlodkowski (1978) defines "competence" as the value for the learner that is a

result of the learning behavior. "Reinforcement" comprises the reinforcement value

attached to the learning experience of the learner. Although motivation throughout an

educational intervention is important, its "Ending" critical period stands out for a few

reasons. Tough (1968) states that when a learner's motivation to continue is even stronger

than the motivation to begin, there will usually be little tendency to stop prematurely.

Wlodkowski (1978) states that motivation is strengthened when the learner completes a

learning initiative and leaves feeling motivated.

This has two positive outcomes: 1) the learner is more likely to have a future

interest in what they have learned and 2) is more likely to use what they have learned

Figure 1. Time Continuum Model of Motivation.[1]
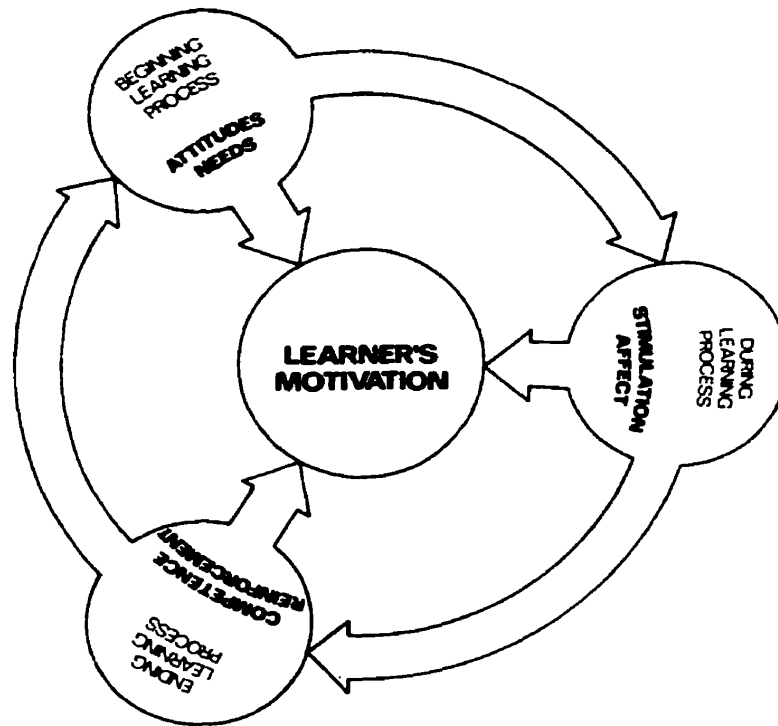
(Wlodkowski,1978). It is easy to assume that the more motivating experiences a learner

has at the conclusion of an educational intervention, the more likely they will become

lifelong learners (Wlodkowski, 1978). Conversely, if motivation is absent, Wlodkowski

(1978) states that the learner can be "turned off" of learning, marked by negativity and

apathy.

Wlodkowski (1985) indicates that Keller's ARCS model indirectly encompasses

all of the six major motivation factors of the Time-Continuum Model of Motivation. In

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[1] Note. From Enhancing adult motivation to learn (p.61), by R.J. Wlodkowski, 1985, San Francisco: Jossey-Bass Publishers.

Table 4

Six Basic Questions for Motivation Planning

Target Period for Revision	Question
Beginning Focus on: Attitudes and Needs	• What can I do to establish a positive learner attitude for this learning sequence? • How do I best meet the needs of my learners through this learning sequence?
During Focus on: Stimulation and Affect	• What about this learning sequence will continuously stimulate my learners? • How is the affective experience and emotional climate for this learning sequence positive for learners?
Ending Focus on: Competence and Reinforcement	• How does this learning sequence increase or affirm learner feelings of competence? • What is the reinforcement that this learning sequence provides for my learners?

Note. From What Motivates Adults to Learn (pp. 66-67), by R.J. Wlodkowski, 1985, San Francisco: Jossey-Bass.

addition to being more detailed than Keller's strategies, the concrete techniques for

enhancing learner motivation developed by Wlodkowski (1985) have grown out of

research conducted specifically with adult learning in classroom-based instruction.

Although Wlodkowski (1985) offers over 60 specific techniques to integrate into a

classroom based instructional intervention, only a select few will be presented here along

with their relation to andragogical design elements and appropriate motivation theories

previously discussed (see Table 5).

If motivation is lacking at the "beginning" critical period of the educational

intervention, Wlodkowski (1985) suggests using the following three strategies in

curriculum revision.

Table 5

Sample Strategies to Enhance Motivation

Critical Period for Revision	Suggested Strategies
Beginning Focus on: *Attitudes and Needs*	• Give the rationale behind any mandatory assignments. • Promote the learner's control of the context of learning. • Make the learning goal and objectives as clear as possible.
During Focus on: *Stimulation and Affect*	• Introduce, connect, and end learning activities attractively and clearly. • Selectively use knowledge and comprehension questions to encourage learner interest. • Selectively use application, analysis, synthesis, and evaluation questions and tasks to encourage learner involvement.
Ending Focus on: *Competence and Reinforcement*	• Acknowledge and affirm the learners' responsibility and any significant actions or characteristics that contributed to the successful completion of the learning task. • Use formative evaluation procedures to measure and communicate learner progress. • Encourage or provide a reinforcing event for positive closure at the end of significant units of learning.

Note. From Enhancing adult motivation to learn (p.253-257) by R.J. Wlodkowski, 1985, San Francisco, Jossey-Bass Publishers.

Strategy 1: Give the rationale behind any mandatory assignments. Because of the

demands on time, energy, and responsibility, most learners will feel leery when

mandatory assignments are given out. Explaining the rationale for any assignments will

indicate that the curriculum designers have conscientiously considered the matter and not

just developed busywork. Sharing this information indicates that the designers have

acknowledged the obligations, benefits, and results of the assignments. Most importantly,

the learners see that they are respected enough to share this information with.

This strategy acknowledges concepts from the motivation theories of self-

actualization and self-efficacy. Sharing the rationale behind mandatory assignments

meets the learner's self-actualization desire to experience and fulfill their potential

through their basic needs being met, such as the desire to know and to understand

(Maslow, 1970). This information can also address levels of self-efficacy in allowing the

learner to decide how thoroughly they will prepare for the upcoming tasks. By explaining

the rationale for the assignments, the learner will be presented with tasks they are

expected to accomplish throughout the educational intervention, encouraging their level

of self-efficacy. As mentioned above, this strategy establishes a climate of respect by

sharing the rationale for why learners should spend their time on assignments, one of the

design elements espoused by the andragogical model (see Table 2). In sharp contrast, the

pedagogical model is more authority-oriented and would not choose to share such

information with its learners.

Strategy 2: Promote the learner's control of the context of learning. In order for

people to build confidence as learners, they must realize that they are most responsible

for their learning. This means that they must feel a sense of personal control over the

process of how, what, and when they learn. This is important considering that the

instructor usually establishes requirements, gives assignments and tests, sets standards for

achievement, controls the learning environment, and sometimes pressures learner

participation. The following methods may be used to increase learners' sense of personal

control:

- When possible, allow the learner to plan and set goals for their learning.

- When possible, allow the learner to make choices about what, how, and when they
  will learn. Choice is the basis of responsibility that permits the learner to see that they
  are in charge of their own learning experience. For example, they can choose topics,
  assignments, or when/how to be evaluated. The instructor's creativity can create
  many opportunities for learners to exercise their right to choose.

- When possible, allow the learner to use self-evaluation procedures. Knowing how to understand both mistakes and progression of personal learning creates a strong sense of participation in the learning process. When a learner can actually tell whether they've really learned something, they feel more responsible for that learning.

- Encourage learners to become aware of personal strengths and abilities in learning activities. For example, telling a student that they have a great talent for explaining concepts, and inviting them to lead a group session may help increase their sense of self-esteem. A learner who is aware of and can use personal assets while learning will feel a strong sense of power and confidence.

- When possible, let the learner participate in analyzing possible barriers to progress in learning. For example, asking, "What do you think the challenges might be in carrying out this activity?" involves them in solving their own learning situation. An advantage of this method is that often learners are better informed about where their problems in learning occur and will feel a stronger commitment to the work at hand in consulted.

This strategy acknowledges concepts from many of the motivation theories presented above. Promoting the learner's control of the context of learning acknowledges the desire to set an individual learning pace, style of learning and structure on the educational intervention, all important reasons for learning as seen by the self-actualization perspective (Penland, in Wlodkowski, 1985). As well, Promoting a learner's sense of internality, or sense of control, directly relates to achievement behavior (Phares, 1991). Attribution theory sees this strategy as important in addressing the dimensions of the internal-external and controllable-uncontrollable continuums, where the former sees the cause of the success as internal and the latter sees the success as within the control of the learner. As mentioned above, this strategy creates a mechanism for mutual planning with learners within an andragogical framework. By promoting their control of the context for learning, it provides an opportunity to establish a dialogue between the curriculum and the learner. The pedagogical model would have the instructor exclusively deciding on the planning of the curriculum.

Strategy 3: Make the learning goal and objectives as clear as possible. When

learners understand exactly what they are supposed to learn, confusion cannot detract

from their learning experience. This may mean sharing learning objectives or learning

outcomes with individuals to clearly let them know what they are expected to learn in the

following meetings.

This strategy acknowledges concepts from the theories of self-efficacy and

achievement motivation. By clearly identifying the learning goals and objectives, the

learner will be able to assess their individual capabilities and determine how thoroughly

they will prepare for the tasks, increasing their perception of self-efficacy. As the goals

and objectives are already identified, the learner can focus their energy on finding

efficient, unique solutions to these difficult problems as asserted by the theory of

achievement motivation (Alschuler et al., 1970). Again, by stating the objectives and

goals of the educational intervention, a climate of respect and collaboration is created.

The pedagogical model would see this as a possibly non-essential aspect of a curriculum

where the teacher does not need to share such information.

If motivation is lacking at the "during" critical period of the educational

intervention, Wlodkowski (1985) suggests using the following three strategies in

curriculum revision.

Strategy 1: Introduce, connect, and end learning activities attractively and

clearly. Each educational intervention typically has a variety of activities within it. Each

of these individual learning activities is significantly enhanced when it is distinctly

introduced and strongly connected to preceding and proceeding learning activities.

In addition to visual/auditory aids and shifts in facilitator's presentation style (body, facial, and voice changes) that indicate new learning activities, some techniques are as follows:

- Asking provocative questions. The facilitator might ask "How many of you have ever. . . ?" "What do you think is. . . ?" "When was the last time . . . ?" "Did you think before you took this training that you were could. . . ?"

- Calling on learners to become active. Ask them to help, to move, to observe, to evaluate, to remember, and so forth.

- Creating anticipation. The facilitator might say "I have been looking forward to doing this exercise with you since our training session began" or "This next set of problems is really tricky, but I have confidence you can handle them."

- Relating the learning activity to pop culture and current events. The facilitator might say "The next person we are going to discuss is the Michael Jordan of the business world." "This case study has a Star Wars quality about it." "What we are going to take a look at next has been organized like an Olympic event."

Being able to connect learning activities is challenging. Automatic segueways add flow and help maintain learner attention while maximizing instructional impact. Some helpful techniques are:

- Using organizational aids such as handouts, outlines, models, and graphs that connect concepts, topics, key points, and other essential information.

- Indicating how the new activity builds on previously learned skills or how it more clearly demonstrates a concept or how it may be helpful in the future.

- Making directions and instructions for the upcoming activity as clear as possible. Learners often stop paying attention because they are simply confused about what they are supposed to do. By presenting accurate directions, instructors can avoid unnecessary distractions and misleading behaviors among their learners.

- Closure refers to how a learning activity ends, helping learners feel a sense of completion. This not only focuses their attention but also gives them the feeling of satisfaction that arises from knowing that a learning task has been accomplished.

- Allowing for feedback, opinions, or evaluation. The facilitator might say "Perhaps the best way to end this exercise would be to share with one another what we have learned from cooperating in this task."

This strategy acknowledges concepts from the theories of self-actualization, self-efficacy and achievement motivation. Fostering a pleasurable environment can encourage learners to continue on the road to self-actualization for the "joy that comes from possession of knowledge, satisfying curiosity, interesting content, practicing a skill, and spending time in the activity of learning" (Tough, 1971). Sharing feedback of opinions can aid learners to self-appraise their abilities and encourage their sense of self-efficacy, increasing their commitment and effort expended to work towards their goals. This strategy also helps learners who desire concrete feedback on how they are performing so that their plans of action can be modified accordingly, an important concept in achievement motivation. As mentioned above, this strategy encourages the design of a pattern of learning experiences for the adult learner. By sequencing content in a logical manner, the learner is able to draw upon their experience to enhance their learning. With the pedagogical model, content is sequenced using the logic of the subject matter, with less thought given to the learner's experiences.

Strategy 2: Selectively use knowledge and comprehension questions to encourage learner interest. Using well-timed, quality questions are opportunities to spontaneously stimulate learners. By selectively using knowledge and comprehension questions, we encourage learners to covertly or overtly respond to whatever is being presented to them. Knowledge questions use the key words: define, identify, recall and recognize. Comprehension questions use the key words: describe, rephrase, compare, reorder, illustrate, contrast, interpret and differentiate. These types of interactions enhance learner participation by stimulating their thinking and making them more active in the learning process. Knowledge questions tend to be overused by instructors and can intimidate

learners because their answers can so easily be categorized as right or wrong. They also

tend to promote remembering but not necessarily thinking. They are most effective when

used infrequently and for the purposes of emphasis, practice, and focusing learner

attention.

This strategy acknowledges concepts from the theories of self-efficacy, self-

actualization and achievement motivation. Having learners answer questions allows them

to believe that they can successfully acquired the target knowledge or understood the

target content. These cognitive processes can add to the perception of self-efficacy and

play a central role in the self-regulation of motivation (Bandura, 1992). In addition,

being asked knowledge and comprehension questions can add a dimension of fun to the

instruction and create a pleasurable environment, an important factor in self-actualization.

This can also create a collegial competition for learners and encourage their achievement

motivation through "getting ahead, improving on past performance, beating competitors

and doing things better and faster (Alschuler et al., 1970). As mentioned above, this

strategy contributes to a mutual self-diagnosis of needs. The andragogical framework

encourages learners to assess their educational needs, while the pedagogical model would

have the teacher taking on that responsibility.

Strategy 3: Selectively use application, analysis, synthesis, and evaluation

questions and tasks to encourage learner involvement. These four categories require

learners to reflect on their learning. They cannot respond to such questions without some

degree of involvement. Each category is briefly explained here and exemplified along

with its key words:

- Application questions and tasks. These require learners to use what they are learning
  to solve problems in particular situations. For example, "Using the two

troubleshooting strategies you have learned, correct as many errors as you can on this completed tax form." Keywords that can be used: apply, solve, classify, choose, select, use, and employ.

- Analysis questions and tasks. These require learners to identify causes and motives as well as to infer, deduce, and generalize. For example, "Why do you think supervisors and employees respond differently to similar job frustrations?" Keywords that can be used: analyze, conclude, infer, distinguish, deduce, detect, why, and give motives, causes, or reasons.

- Synthesis questions and tasks. These require learners to think creatively and to develop something new by putting parts of different ideas, skills, or information together to make a unique whole. Synthesis activities involve learners in solving problems that have more than one answer or in producing something that has more than one possibility. For example, "Given this list of client needs, design an appropriate computer network that is as economical as possible." Keywords that can be used: predict, draw, construct, produce, originate, propose, plan, design, synthesize, combine, develop, create, and solve (more than one answer).

- Evaluation questions and tasks. These require learners to judge or appraise anything they are perceiving. For example, "In your opinion, which prime minister since 1960 has had the most effective relationship with parliament?" Keywords that can be used: judge, argue, decide, appraise, evaluate, and any request for a person's opinion.

This strategy acknowledges concepts from the theories of achievement motivation, self-actualization and self-efficacy. Learners marked by achievement motivation will appreciate the challenge to use what they have learned and development of creative ways to solve problems. These techniques are also helpful for learners characterized by self-actualization who may find such application, analysis, synthesis and evaluation questions and tasks useful in highlighting the intrinsic rewards of learning. It is true that "feelings of incompetence lead to serious motivational problems for adult learners" being challenged by these questions can increase the learner's sense of self-efficacy (Wlodkowski, 1885, p.183). As mentioned above, this strategy enables learners to carry out challenging tasks to reinforce their learning. Within the andragogical framework, this

use of experiential techniques is advocated while the pedagogical model would depend on the teacher to simply use transmittal techniques.

If motivation is lacking at the "ending" critical period of the educational intervention, Wlodkowski (1985) suggests using the following three strategies in curriculum revision.

Strategy 1: Acknowledge and affirm the learners' responsibility and any significant actions or characteristics that contributed to the successful completion of the learning task. Acknowledge any activity that the learner has engaged in or exemplified that has contributed to their success. This can take the form of providing feedback, praise, or other reinforcements with the learner.

This strategy acknowledges concepts from many theories of motivation presented earlier. The sense of individual control over outcomes is essential and the acknowledgement and affirmation of the learner's responsibility can only help in increasing their motivation. An adult learner wants to set their own learning pace, to use their own learning style and put their own structure on learning. These concepts are important in self-fulfillment and self-direction in learning for the self-actualizing learner. Learners characterized by achievement motivation can benefit from pride in their accomplishments and experience pleasure from striving for the goals that they set for themselves. Internality can be reinforced by acknowledgement of the learner's responsibility in learning, resulting in increased achievement behavior (Phares, 1991). Within the framework of attribution theory, the dimension of "controllable-uncontrollable" allows learners to sense their ability to affect their learning outcomes through personal effort and diligence and contribute to their continued motivation.

Formal recognition of these significant actions can bolster a learner's sense of self-efficacy and increase the commitment and effort expended on future learning activities. As mentioned above, this strategy establishes a climate of mutual respect in a collaborative informal environment as a design element advocated by the andragogical model. The pedagogical model would have a more formalized, competitive climate with less acknowledgement and affirmation of learners' significant actions.

Strategy 2: Use formative evaluation procedures to measure and communicate learner progress. In this instance, formative evaluation procedures are diagnostic measures that check learner progress. These measures indicate what was learned and what the learner needs to do in order to master the current material. Such a continuous feedback process helps to assess strengths and weaknesses in learner performance. These procedures monitor the learning of adults and help motivate them to make the appropriate effort. To maximize their effectiveness, the measures must correspond to a well-defined content or skill portion of a course or training unit and help to ensure that each set of learning tasks is thoroughly mastered before subsequent learning tasks are started.

This process provides valuable information for learners as well as instructors. For learners who have successfully learned the material, the feedback from these procedures should confirm their sense of competence and encourage them that their present style of learning is working. For learners who lack the requisite knowledge, these procedures should reveal particular points of difficulty and indicate the specific ideas, skills, and processes that they still need to improve upon. This may not reduce any anxiety about achievement but should help reduce any feelings of frustration and worry that occur when lagging in a learning task. Formative evaluation procedures can also provide feedback to

the instructor by identifying specific points in the instruction that are in need of revisions. These formative evaluation processes are most effective when they are separated from grading processes. This assures learners that mistakes are not counted against them but are part of the learning process.

This strategy acknowledges concepts from the theories of achievement motivation and self-efficacy. In order for those characterized by achievement motivation, such feedback will satisfy their desire for concrete feedback on how well they are doing so that their plans of action can be modified accordingly for future learning. Those characterized by self-efficacy can benefit from this combination of goals and performance feedback in order to increase motivation levels (Bandura, 1992). As mentioned above, this strategy incorporates the andragogical design elements of evaluation through mutual re-diagnosis of needs and mutual measurement of the curriculum. From the perspective of the pedagogical model, this evaluative responsibility rests on the teacher for evaluating all aspects of the educational intervention.

Strategy 3: Encourage or provide a reinforcing event for positive closure at the end of significant units of learning. When a learning segment has come to an end, positive closure increases learner motivation as it affirms the entire process in many ways by: (a) reinforcing the value of the experience; (b) directly or indirectly acknowledging competence; and (c) increasing cohesiveness within the group. Positive closure can take the form of a small gesture, such as thanking learners for their cooperation and hard work. It can also take the form of something more elaborate such as an awards ceremony. Some other ways to achieve positive closure are:

- Celebrating. Enjoy with learners their moments of accomplishment. This can be informal discussions, a party, reflecting on the experience through "remember when"

statements, or congratulations. Celebrating allows people to feel pleasure for whatever they personally accomplished or valued during the entire learning situation.

- Acknowledging. This can be done with simple statements of appreciation or awards. The goal is to recognize learner contributions or achievements that took place throughout the duration of the educational intervention.

- Sharing. This is anything the instructor and learner might do to show the collective caring and sensitivity towards the educational intervention. This type of sharing can take the form of an eloquent final statement that may include a poem or inspirational quote.

This strategy acknowledges concepts from the theories of self-actualization and achievement motivation. Positive closure encourages the joy that comes from possessing knowledge, satisfying curiosity, interesting content, practicing a skill, and spending time in the activity of learning— all self-actualization-type behaviors (Tough, 1971). Those characterized by achievement motivation will appreciate this type of recognition of their work as they take pride in their accomplishments and get pleasure from striving for the challenging goals of excellence that they have set for themselves. As mentioned above, this strategy contributes to a climate of mutual respect in an informal manner as an andragogical design element. The pedagogical model would not consider closure as an essential design element for climate-setting.

This collection of motivational strategies advocated by Keller's ARCS model and Wlodkowski's Time-Continuum Model has strong foundations in the five motivation theories presented above. In general, the strategies outlined by both models attempt to encourage motivation through increasing curiosity, making the target knowledge relevant, focusing on personal ability and characteristics as factors in success, and affirming a natural sense of joy that comes from learning. These motivational strategies are seen as important for their role in learner motivation and will be integrated into the

proposed Evaluation Design of Motivation and Achievement. These details are covered in chapter 2 of this thesis.

Evaluation Models

Descriptions of General Evaluation Models

How can motivation, learning, motivation strategies and evaluation be combined in order to improve adult learning? This section will first present a brief overview and summary of existing models based on categories outlined by Popham (1988) (see Table 6). It will then highlight an evaluation framework, developed by Kirkpatrick, that is useful in assessing adult learning. After a discussion about what functions these models should fulfill, the need for the development of an alternative evaluation design will be addressed.

The goal-oriented evaluation model sees evaluators working closely with staff to agree on the goals and objectives of the educational intervention, then proceed to measure to what degree learners meet them. A possible disadvantage to this model is that evaluators sometimes focus exclusively on these goals and objectives and overlook why a given program succeeds or fails. This narrow focus also prevents any acknowledgement of benefits or unintentional side effects of the program. As well, goal-based evaluations tend to serve only one audience, that of the program managers who provide the goals and objectives, employ the evaluator and receive the final evaluation reports (Posavac & Carey, 1992).

The decision-oriented evaluation model has evaluators providing information to educational decision-makers. Popham (1988) states that although this aspect of evaluation is shared by other models, a characteristic of the decision-oriented model is

Table 6
Evaluation Models

Model	Emphasis
Goal-Oriented Evaluation	Evaluation should assess student progress and the effectiveness of educational innovations.
Decision-Oriented Evaluation	Evaluation should facilitate intelligent judgments by decision-makers.
Transactional Evaluation	Evaluation should depict program processes and the value perspectives of key people.
Evaluation Research	Evaluation should focus on explaining educational effects and devising instructional strategies.
Goal-Free Evaluation	Evaluation should assess program effects based on criteria apart from the program's own conceptual framework.
Adversary Evaluation	Evaluation should present the best case for each of two competing alternative interpretations of the program's value with both sides having access to the same information about the program.

Note. From Evaluator's handbook (p.7) by L.L. Morris and C.T. Fitz-Gibbon, 1978b, Beverly Hills, CA: Sage Publications Ltd.

that evaluators "...collect and present information needed by someone else, who will determine the worth" of the program (p.33). In addition to supporting the decision-makers' agenda, practitioners who follow this model will actively engage in distancing themselves from any personal valuing of the evaluation, which sets them apart from other roles of evaluation presented in other models.

The transactional evaluation model focuses on the educational processes of a program, including its environment, organization and curriculum (Madaus, Scriven & Stufflebeam, 1983). This model makes use of many informal techniques such as interviews and observations and relies heavily on the case study as a methodology. The evaluation is carried out with the intention of gaining a greater understanding of how a program works rather than the outcomes that are generated. Rippey (1973) states that the

"conventional considerations of reliability, validity and objectivity are less important than those of timeliness, relevance, and the observable effects of generating evaluation information" (p.4). In transactional evaluation, the intention is to transform any conflict energy into productive energy and to clarify the roles of stakeholders rather than produce new knowledge or investigate any type of causality (Rippey, 1973).

The evaluation research model has its practitioners attempting to draw conclusions rather than make decisions based on their work (Worthen & Sanders, 1973). A focus of this research involves investigating the relationship between variables that can be generalized to a greater number of similar situations. These researchers explore areas with little thought given to the worth of the evaluation findings and are interested more in the scientific truths of their work (Worthen & Sanders, 1973). Popham (1988) offers a final thought on the difference between researchers and evaluators, saying that the former are sometimes content to describe the world while the latter want to make it better.

The goal-free evaluation model developed out of a response to goal-based evaluation. The former has evaluators working with no knowledge of existing goals and objectives of an educational intervention. This model sees knowledge of goals and objectives as biases that serve only to focus on the way the program is supposed to be carried out and not on how the program is actually carried out (Posavac & Carey, 1992). An evaluator adopting this model would spend much time studying the program, its staff, clients, setting and extant data to identify all positive and negative impacts.

The adversary evaluation model sees evaluators with different agendas working on the same project. This model has several people present the advantages and disadvantages of a given program, done with the goal of ensuring an unbiased

presentation of information. One possibility with this model is to have one set of

evaluators present a program in the most positive light possible while another set of

evaluators does the opposite. The final report is composed of both accounts and allows a

jury of stakeholders to synthesize the competing views (Popham, 1988).

While all these models have elements useful for evaluation, they all have different

foci, but none are applied specifically to adult learning. The decision-oriented model

focuses evaluation on facilitating judgments by decision-makers. Transactional

evaluation concentrates on program processes from key perspectives. Evaluation research

highlights educational effects and devising instructional strategies. The goal-free

evaluation model assesses program effects apart from intended goals and objectives.

Adversary evaluation presents competing alternative interpretations for assessing a

curriculum. Although none of these models mention the importance of learning

assessment in an adult-learning context, the goal-oriented model seems most applicable

to an adult learning environment as it targets assessment of student progress and the

effectiveness of the associated educational processes.

Kirkpatrick's Four-Level Evaluation Model: A Framework Congruent With Adult Learning

When discussing adult learning, the goal-oriented model is applicable, but not

entirely appropriate. Its focus on learner assessment is valuable, but lacks direction in

what aspects of adult learning are important. To address this shortcoming, it is useful to

discuss Donald Kirkpatrick's Four-Level Evaluation model whose "conceptualization of

the evaluation process is the most congruent with andragogical principles..." (Knowles,

1990, p.137).

Kirkpatrick's Four-Level model first made its appearance on the evaluation scene in 1959 and has held strong since (Abernathy, 1999). By focusing on four levels of evaluation: reaction, learning, behavior, and results, valuable information can be provided for the evaluator regarding curriculum effectiveness and revisions (Kirkpatrick, 1978). A brief overview of the four levels will be helpful at this point.

The first level, *reaction*, deals with how learners feel about the educational intervention. Kirkpatrick (1996) refers to this as "customer satisfaction," and asserts that a positive reaction is essential for the continuation of the educational intervention; if learners do not act positively, they will likely neither be motivated nor interested to learn. While positive reactions do not ensure that learning takes place, negative reactions will certainly reduce the possibility of learning (Kirkpatrick, 1998). Kirkpatrick (1998) states that measuring reaction is important for the following reasons:

- It provides valuable feedback that helps evaluate the educational intervention as well as collects suggestions for future improvements.
- It conveys the message to learners that their feedback is respected and relevant for determining the effectiveness of the educational intervention.
- It provides quantitative data that can be given to managers or administration involved in the educational intervention.
- It can provide quantitative data that can be used to establish standards for future sessions of the educational intervention.

The second level, *learning*, deals with the "extent to which participants change attitudes, improve knowledge, and/or increase skill as a result" due to attending the educational intervention (Kirkpatrick, 1998, p. 101). All training programs are trying to increase either one or more of these three (Kirkpatrick, 1996). The following basic questions are useful in gauging whether one or more of these three were increased: What knowledge was learned, what skills were developed or improved and/or what attitudes were changed? Kirkpatrick (1998) states that learning is important to measure because no

change in the following level, *behavior*, can take place unless the target knowledge, skills or attitudes have changed.

The third level, *behavior*, is defined as the "extent to which change in behavior has occurred' because the participants attended the educational intervention (Kirkpatrick, 1998, p.102). It is clear that the purpose of an educational intervention is to do more than improve knowledge, skills and attitudes in the classroom, with the ultimate outcome being transfer outside of the learning environment. As Kirkpatrick (1976) puts it, "on-the-job behavior change is an objective" and can be gauged by asking the questions "how much and what type of change actually took place on the job because of the training program?" (p.6).

The fourth level, *results*, is seen as the "greatest challenge" for evaluators (Kirkpatrick, 1998, p.109). This level is defined as "the final results that occurred because the participants attended the program" (Kirkpatrick, 1998, p.105). These results may include "improved productivity, better quality, lower costs, meeting deadlines, more competition, reduced accidents, improved morale, lower turnover, and ultimately, more profits or better service" (Kirkpatrick, 1976, p.6). Not all results take the form of such tangible results. Kirkpatrick (1998) states that it is "difficult if not impossible" to measure any final results and attitudinal changes such as leadership, empowerment or motivation, may need to be measured in terms of improved morale or other non-monetary terms (p.106). Part of the difficulty in measuring this fourth level lies in the fact that findings will likely provide evidence, but not proof, that positive results come from an educational intervention.

Based on these four levels, Kirkpatrick's evaluation model is more appropriate

with adult learning. Collecting data from Level 1, deals with how learners feel about the

educational intervention and acknowledges that such feedback is respected and an

important part of the evaluation process. Gathering data from Level 2, learning, is

consistent with the goal-oriented evaluation model's focus of tracking student progress.

Collecting Level 3 data, behavior, draws upon an adult learner's need to be life-centered,

task-centered, or problem-centered. Assessing Level 4, results, acknowledges the fact that

adult learners want to be able to apply their knowledge and skills to perform more

effectively. Kirkpatrick's formulation of the four-level model clearly makes use of

andragogical assumptions, but neglects to incorporate the motivation element that was

contained in his work related to motivation and training (Kirkpatrick, 1970). Although his

first level targets learner reaction, it addresses how the learner feels *about* the educational

intervention and not how the learner feels *because* of the educational intervention. In

order to assess this aspect of learning, an alternative framework is useful and will be

outlined in chapter 2. It should be noted that the parameters of an evaluation model are

often influenced by particular viewpoint that a creator takes. In the following section

different theoretical perspectives of evaluation will be discussed.

Philosophical Foundations of Evaluation Models

In order to gain a clearer understanding of evaluation, it is helpful to briefly discuss its

two driving philosophies: objectivism and constructivism. Scanning Table 7 will show

that the two differ on many perspectives, such as reality, mind, thought and meaning.

Where objectivism relies heavily on external factors to an individual, constructivism

depends more on internal factors within an individual. More importantly, while

objectivism sees the mind as a reflection of the external world, constructivism assumes

that the individual is active in interpreting the external world. Adopting either of these

philosophies heavily impacts the mandate of an evaluation, while adopting both can

result in a stronger, united approach. The following overview will highlight their

respective strengths and weaknesses of each philosophy.

Objectivism

Jonassen states that the philosophy of Objectivism is based on the following

assumptions:

- There is a real world consisting of entities structured according to their properties and relations. Categorization of these entities is based on their properties.
- The real world is fully and correctly structured so that it can be modeled.
- Symbols are representations of reality and can only be meaningful to the degree that they correspond to reality.
- The human mind processes the abstract symbols in a computer-like fashion so that it mirrors nature.
- Human thought is symbol-manipulation and it is independent of the human organism.
- The meaning of the world exists objectively, independent of the human mind and it is external to the knower (Jonassen, in Vrasidas, 2000).

The use of objective measurement in evaluation is often based on the psychology school

of behaviorism that focuses on objective data of behavior as the basic subject matter of

psychology (Driscoll, 1994). Using such a goal-driven approach in evaluation typically

starts with the objectives of the educational intervention and concludes with the major

question: "Did the learner meet the objectives?" (Vrasidas, 2000, p.347).

From an objectivist standpoint, "learning" is achieved when this external

knowledge is transferred to within the individual (Driscoll, 1994). The goal of objectivist

instruction is to overlay the structure of the world onto the learner where the mind is a

reference to the real world which allows everyone to gain the same understanding of this

Table 7

Assumptions Inherent in Objectivism and Constructivism

	Objectivism	Constructivism
Reality	External to the knower	Determined by the knower Dependent upon human mental activity
	Structure determined by entities, properties, and relations	Product of mind Symbolic procedures construct reality
	Structure can be modeled	Structure relies on experiences/interpretations
Mind	Processor of symbols	Builder of symbols
	Mirror of nature	Perceiver/interpreter of nature
	Abstract machine for manipulating symbols	Conceptual system for constructing reality
Thought	Disembodied: independent of human experience	Embodied: grows out of bodily experience
	Governed by external reality	Grounded in perception/construction
	Reflects external reality	Grows out of physical and social experience
	Manipulates abstract symbols	Imaginative: enables abstract thought
	Represents (mirrors) reality	More than representation (mirrors) of reality
	Atomistic: decomposable into "building blocks"	Gestalt properties
	Algorithmic	Relies on ecological structure of conceptual system
	Classification	Building cognitive models
	What machines do	More than machines are capable of
Meaning	Corresponds to entities and categories in the world	Does not rely on correspondence to world
	Independent of the understanding of any organism	Dependent upon understanding
	External to the understander	Determined by understander
Symbols	Represent reality	Tools for constructing reality
	Internal representations of external reality ("building blocks")	Representations of internal reality

Note. From "Objectivism versus constructivism: Do we need a new philosophical paradigm?" by D.H. Jonassen, 1991, Educational Technology Research and Development, 39, no.3, pp. 5-14.

external knowledge (Jonassen, 1991). Based on its discovery of universal laws of conditioned learning, behaviorism endeavors to set up learning environments by disregarding peculiarities of the learner and focusing on the reinforcement contingencies to be implemented (Driscoll, 1994). Decades of students have passed through the educational system immersed in this philosophy, responding to test items either correctly or incorrectly.

Not everybody has faith or belief in this philosophy. Educators have questioned objectivism and its related evaluation methods, asking if students are learning or memorizing, and if the educational system is fostering free thinkers or creating automatons. Objectivism clearly indicates that students are not encouraged to interpret what they perceive but instead rely on an instructor to interpret events for them. Cranton (1992) states that this reliance on an external source is a weakness of behaviorists who overlook the "individual" by ignoring important cognitive and affective processes taking place within the learner while focusing on their observable beahviors.

Constructivism

Yarusso (1992) summarizes constructivism as "knowledge derived from the philosophical proposition that reality is created or constructed by the individual" (p.7). It holds that cognition is the process by which each individual builds an internal representation of knowledge, which results in a personal interpretation of reality. In other words, learners are not empty vessels waiting to be filled, but active organisms searching for meaning in the world surrounding them (Driscoll, 1994). In a constructivist environment, evaluation is goal-free where program goals are not taken into consideration because they might bias the findings and prevent the evaluator from

identifying unexpected effects of the educational intervention (Scriven, in Vrasidas,

2000).

Vrasidas (2000) explains that the "basic and most fundamental assumption of

constructivism is that knowledge does not exist independent of the learner, knowledge is

constructed" (p.348). In addition, the major philosophical assumptions of constructivism

are:

- There is a real world that sets boundaries to what we can experience. However, reality is local and there are multiple realities.
- The structure of the world is created in the mind through interaction with the world and is based on interpretation.
- The mind creates symbols by perceiving and interpreting the world.
- Human thought is imaginative and develops out of perception, sensory experiences, and social interaction.
- Meaning is a result of an interpretive process and it depends on the knowers' experiences and understanding (Vrasidas, 2000, p.348).

An interesting aspect of this philosophy is the position that knowledge structures

do not necessarily correspond to external reality, but may still be valuable for an

individual: independent of what is being learned, constructive processes help learners

form, elaborate and sometimes test mental structures until a satisfactory one develops.

These new conflicting experiences cause dissonance in the previously established

structures, sometimes leading to new structures being constantly developed, resulting in

an individual's unique reality (Ertmer & Newby, 1993). Since individuals create different

realities based on personal experiences of the world, it is difficult to achieve a

predetermined "correct" meaning of anything.

Constructivism addresses this very weakness of objectivism, where cognitive and

affective processes of the "individual" are overlooked. Vrasidas (2000) states that

constructivists are interested in the learner's "cognitive processes, self-reflective skills,

and the learning process itself (p.350). In contrast to objectivism, constructivists do not expect all learners to learn the same thing due to the difficulty in controlling individual variables such as motivation, intelligence and background knowledge (Vrasidas, 2000).

It seems clear that both objectivism and constructivism would steer educational evaluation in different directions. An objectivist would be preoccupied with discovering "truth" using objective methods of evaluation, while a constructivist would be interested in finding "perceptions of truth" using more subjective means. Despite the differences, both have relevant contributions to the evaluation process. Describing and explaining specific phenomenon by collecting numerical data based on observable behaviors to statistically analyze is a common approach to take in an objectivist framework (Gall et al., 1996). Finding meaning by interpreting cases intensively in natural settings and using interpretational analysis is more the perspective taken by a constructivist (Gall et al., 1996). How can the philosophies summarized above affect the nature of data collection within an evaluation framework? Two categories of data will be presented in the following section that correspond to the two philosophies of objectivism and constructivism mentioned above.

Methods of Data collection

Two possibilities exist for collecting data for an evaluation: objective and subjective measures. Objective measures depend on using a goal-driven approach in evaluation where "learning" is achieved when program objectives are transferred to within the individual. Examples of such objective measures are standardized tests of achievement which are popular in various situations and populations. One advantage of these standardized tests is that with proper implementation, the introduction of bias in

data collection is minimized. Despite these perceived advantages, standardized tests can also "bias evaluation results by imposing a standardized and controlled stimulus in an environment where learning depends on spontaneity, creativity, and freedom of expression" (Shapiro, in Patton, 1975, p. 24). Although reliable and easy to statistically analyze, Patton (1975) argues that quantitative methodology actually limits and biases the types of possible questioning that can be useful in scientific inquiry.

Subjective measures depend on individuals creating different realities based on personal experiences of the world, making it difficult to achieve a predetermined "correct" meaning of anything. Filstead asserts that subjective measures allow "the researcher to 'get close to the data,' thereby developing the analytical, conceptual, and categorical components from the data itself--rather than from the preconceived, rigidly structured, and highly quantified techniques that pigeonhole the empirical social world into the operational definitions that the researcher has constructed" (Filstead, in Patton, 1975, p.23). Interacting with data makes it possible for evaluation researchers to make use of personal insights and behavior in their work. As Scriven warns, "for the social sciences to refuse to treat their own behavior as data from which one can learn is really tragic" (Scriven, in Patton, 1975, p.23). Subjective measures seem appropriate if the goal of evaluation is to "bring the mind and feelings of the human being back into the center of valuation research--a center that has thus far been dominated by techniques and rules" (Patton, 1975, p.23).

There is a need for a deeper understanding of the relevant context of behavior and the meaning of specific outcomes to the individual in a more holistic, humanistic setting (Patton, 1975). If the goal of evaluation is understanding, then objective measures are not

sufficient. To understand means gaining insight into mental states and subjectivity is the best method to use in order to accomplish that. As Patton (1975) states, an alternative evaluation paradigm needs "to legitimize and incorporate this subjectivity into evaluation research, not to the exclusion of the methodology of the dominant paradigm, but in addition to it" (p. 25).

The advantages for using objective measurements is well understood, but the advantages of a constructivist approach are also be beneficial in an evaluation context. As constructivist learning encourages multiple perspectives in different contexts, multiple assessment methods are necessary. These varied assessment methods are useful in keeping track of the change in learners' thinking and learning skills (Vrasidas, 2000). In order to adapt, one possibility is the use of traditional objectivist tests in conjunction with appropriate constructivist evaluation methods such as portfolio and performance assessment (Vrasidas, 2000). As well, reflection papers and self-reflective journals can be incorporated in order to provide evidence of change in learners' cognitive processes. Discussions and interviews can further reveal changes in learners' thinking and learning processes.

Another interesting aspect of constructivist evaluation lies in the concept of negotiation. Learners can negotiate with themselves and their facilitator regarding aspects of the curriculum such as content, objectives, expectations, and evaluation components. This process makes it more likely that the learners will buy in to the curriculum and be responsible for accomplishing their tasks (Vrasidas, 2000). Active participation in the evaluation process is encouraged, as it provides the learners with the opportunity to "gain ownership of the evaluation process, this making them accountable for their own learning

(Vrasidas, 2000). An additional benefit is that involvement in the evaluation process also encourages self-reflection, another goal of constructivist learning.

Keeping in mind the advantages of adopting both an objectivist and constructivist philosophy, a decision must be made regarding data collection insruments. In general, Morris and Fitz-Gibbon (1978) state that the evaluator will "assess achievement using whatever method she and her immediate audience perceive as providing credible evidence" (p.11). As mentioned above, evaluators have a wide range of methods to select from when carrying out their work: questionnaires, performance/achievement tests, face-to-face and telephone interviews, observations, examination of the literature, as well as personal, financial and other records (Fink, 1995). Gall et al. (1996) add to this list performance assessment and self-report measures as other possible ways to collect data. In light of the current work, focusing on pencil-and-paper tests and performance assessment will prove valuable.

Paper-and-Pencil Tests

Two types of paper-and-pencil tests exist: self-report devices and achievement tests. Many self-report measures of personality ask individuals to respond to items that measure individual differences in such areas as traits, needs, psychological disorders, values, and attitudes (Gall et al., 1996). Some advantages to using this method are low cost and ease of administration and scoring due to their objective items (Gall et al., 1996).

Popham (1988) states that the individual completing the self-report device is usually "not responding in terms of the best possible performance," but rather about individual feelings about a given circumstance (p.89). Collecting truthful information about the interests and attitudes of a learner allows an educator to draw inferences about

their affective dispositions. Two other limitations of this type of self-report are: (a) dependency on participant truthfulness and (b) participant response set. This first limitation of personality inventories is that they depend largely on the honesty and conscientiousness of the individual taking the test and that "many inventories contain a 'lie scale' or 'carelessness index' to detect individuals whose scores would lead researchers and practitioners to make invalid inferences" (Gall et al., 1996, p. 269). Gall et al. (1996) state that the "second limitation that can result in invalid responses to a personality inventory is a response set, which is the extent to which an individual's responses reflect a general predisposition rather than a careful response to the content of each item" (p.271). Three types of response sets have been identified through research: (a) social desirability, where an individual tends to present oneself in a positive manner; (b) acquiescence, where an individual agrees with items irrespective of their content; and (c) deviance, where an individual responds in ways that are different from typical responses (Gall et al., 1996). Popham (1988) warns that "considerable sophistication has to be employed in the creation of valid affective measures" (p.170).

When dealing with the construct of motivation, Wlodkowski (1985) states that it is impossible to accurately assess whether a learner is motivated or not (p.277). Keller indicates that precise measures of motivation are inadequate and are typically not highly correlated with performance (Keller, in Wlodkowski, 1985). Faced with such barriers, it is understandable that attempts to develop such measures necessitate great investments of resources, a reason that Popham (1988) recommends adapting existing measures for a specific job.

In contrast to self-report devices, achievement tests attempt to gauge how much

the learner knows or how well the learner can solve certain types of problems. Fink

(1995) adds that these written tests tend to gauge "knowledge, understanding, and

application of theories, principles, and facts" (p.122). Many commercial publishers and

government agencies develop standardized tests that can be adapted for any evaluation.

Gall et al. (1996) state that there are many advantages to standardized tests: "the items are

well written, standard conditions of administration and scoring have been established,

and tables of norms are provided" (p.259). Gall et al. (1996) also point out the associated

disadvantages to standardized tests, such as: (a) they usually impose a restricted time

limit, (b) they may not accurately reflect characteristics of individuals who are slower,

more deliberate, or more thoughtful in responding than peers, and (c) they are designed to

permit comparison of individuals throughout a large population and therefore do not

reflect the unique experiences of different types of individuals.

If using standardized achievement measurements are not feasible for the

educational intervention to be evaluated, an alternative is to develop locally constructed

tests (Gall et al.,1996). Such locally constructed tests may be appropriate for instructional

reasons, but weak in validity and reliability for research. If the evaluator does decide to

develop their own measurement, Morris and Fitz-Gibbon (1978) offer four guidelines for

objectives: (a) they should be clearly stated, (b) they should be verified against the

program's implementation in order to produce a relevant measure, (c) they should reflect

the level of skill attainment which the program hopes to follow and (d) those which are

the basis of the test should be high priority.

Program objectives can be found in various sources, such as written instructional materials that are being used by participants and facilitators. Resource manuals are often prefaced with lists of objectives accompanying curriculum outlines. If the program content is highly specialized or if the assessment is informal, the evaluator may choose to develop their own objectives. This can be accomplished by interviewing subject matter experts or by observing the program in action.

A program may have many formal objectives, but the evaluator should verify these with the objectives that are actually implemented in order to produce a relevant measure. In some cases, some objectives are actively sought after while others for some reason or another are dropped. The latter may occur due to situations where facilitators need to revise curriculum due to participant needs or other external factors. By consulting with program staff, facilitators and perhaps even participants, the evaluator should be able to design an assessment that measures achievement of objectives.

Performance Assessment

While the value of paper-and-pencil tests is derived from a possible relationship to real-life tasks, performance assessment is a method of directly evaluating a learner from examining their performance on complex, complete, real-life tasks (Gall et al., 1996). As learning "represents an acquired tendency to respond in a particular way when confronted with a particular stimulus situation," performance assessment seems appropriate as an evaluation method for assessing achievement. An added advantage to performance assessment is that it allows learners to demonstrate what they have learned, increasing their motivation and self-confidence when an effective performance has occurred (Wlodkowski, 1985).

Another benefit of performance assessment comes with a learner who might

display sufficient knowledge on a paper-and-pencil test but who may not be able to

demonstrate that knowledge in a real-life situation. Gall et al. (1996) state that

performance assessment allows an evaluator the choice of assessing either the learner's

performance on task completion or the final product that results.

In order for design a valid performance assessment eight criteria should be

adhered to (see Table 8). In order to respect its curriculum, a performance assessment

should not have any negative consequences. For example, it should not use too many

resources such as money or time and detract from the rest of the educational evaluation

by being inefficient. There should be an element of fairness involved when judging

outcomes, where different judges receive training in order to use the same criteria to

evaluate all learners. The performance assessment should have a high degree of

generalizability so that the learner can use the target behavior in other situations while at

the same time generating a high level of cognitive complexity to fully use the target

knowledge and skills that are being instructed. The content quality of the performance

assessment must be representative of real-life tasks and authentic, with the judges using

appropriate scoring criteria. The content coverage of the performance assessment should

adequately cover the amount of information delivered during the educational

intervention.

Analyzing the validity criteria for performance assessment can reveal strengths as

well as weaknesses in this method. Gall et al. (1996) point out that where performance

assessment is weak, such as the challenge of adequate content coverage, it is a strength of

the paper-and-pencil test. The use of both performance assessment in combination with

Table 8

Eight Criteria for Judging the Validity of Performance Assessments

Criteria	Questions
Consequences	Are the consequences of using the performance assessment reasonable? Did the performance assessment take an undue amount of time away from instruction?
Fairness	Did all students have an equal opportunity to acquire the expertise measured by the performance assessment? Did different judges apply different criteria in rating students' work?
Generalizability	Is there evidence that an individual's quality of work on one performance task will generalize to other similar tasks?
Cognitive complexity	If the performance assessment is designed specifically to measure students' proficiency in higher-order thinking skills, does it actually do so, or can students draw on their memory of how they have done similar tasks previously?
Content quality	Are the performance assessment tasks and scoring criteria representative of real-life tasks and quality indicators?
Meaningfulness	Do groups other than the experts who designed the performance assessment task and scoring criteria view them as authentic?
Content coverage	Does the performance assessment adequately represent the content domain covered during instruction? Was the amount of content covered during instruction unduly constrained by the time required for performance assessment?
Cost and efficiency	Is the performance assessment too costly and cumbersome to administer?

Note. From Educational research: An introduction (p..268) by M.D. Gall, W.R. Borg and J.P.Gall, 1996, White Plains, NY: Longman Publishers, USA.

paper-and-pencil tests can balance out the limitations of each, benefiting evaluations of instructional methods on learning (Gall et al., 1996).

Performance assessment is traditionally seen as an objective measure of learner progress. This data collection method depends on previously determined, specific criteria for assessing learner progress. In light of adult learning design considerations and its more subjective needs, performance assessment can be viewed as having a largely untapped potential. Andragogical evaluation design considerations dictate that adult learners desire mutual re-diagnosis of needs and mutual measurement of educational interventions. Although performance assessment can begin with learner assessment using a checklist of observable, objective target behaviors, it does not need to end there. Upon completion of the performance assessment, the opportunity to create a dialogue with the learner exists. By using the objective measures of the performance assessment as a starting point, a collaborative re-diagnosis of needs and shared assessment of the educational intervention can take place.

Validation of Data: Triangulation Strategies

The use of such different data collection sources at one time is important. Popham (1988) states that a single measurement instrument is generally inadequate to provide valid data. To address this issue, the combination of different measures is recommended (Popham, 1988). Such a strategy is called "triangulation" and combines different measures to provide stronger information than if the measures were used in isolation. The use of triangulation is a powerful method of avoiding dependence on one data source or method, which can weaken validity and credibility of findings (Patton, 1990). This triangulation strategy can take the form of: (a) data triangulation-the use of different data

sources in one study; (b) investigator triangulation-the use of several different evaluators;

(c) theory triangulation-the use of multiple perspectives to interpret one set of data; and

(d) methodological triangulation-the use of multiple methods to study a single problem.

Patton (1990) states that in practice, triangulation can be achieved with almost any given

combination of characteristics, measurement approaches, design approaches, and

different analytical approaches.

Judging Learning Outcomes

After data is collected, there are two ways to score or compare them: norm-

referenced and criterion-referenced measures. Gall et al. (1996) explain norm-referenced

measurement as involving the "interpretation of an individual's score by comparing it to

the scores earned by other individuals" (p.260). Norm-referenced orientation is useful if

the reason for assessing is to rank order the learners in a continuum of achievement. This

measure is most appropriate when a test includes items from a generally defined area of

content and when a wide range of scores is collected.

One disadvantage to norm referencing is that little is revealed regarding a

learner's specific strengths and weaknesses. Gall et al. (1996) offer the following

example to further explain: "Student A does very well on addition and subtraction,

average on multiplication, and poorly on division; student B performs at an average level

in all four operations. These students differ greatly in their strengths and weaknesses, yet

both could obtain exactly the same score on a norm-referenced test of arithmetic

achievement" (p.261).

Gall et al. (1996) explain criterion-referenced measurement as involving the

interpretation of an individual's score by comparing it to a pre-specified standard of

performance, where "achievement tests designed for criterion-referenced interpretation typically focus on a narrow domain of knowledge or skills" (p.261). Gall et al. (1996) further explain that a major reason for using criterion-referenced measurement is to collect precise data related to a "learner's level of performance and specific deficiencies in the domain covered by the test" (p.262). Using such a pass/fail scoring system based on predetermined criteria is appropriate when deciding if remedial work is needed.

Morris and Fitz-Gibbon (1978) state that the "growing consensus among evaluators is that, in general, criterion-referenced tests serve evaluation purposes better than do norm-referenced tests" (p.18). Although norm-referenced measures are useful for comparing participant performance with external comparison groups, they fail to reveal strong and weak points of training, useful information for the evaluator to possess. As well, such criterion-referenced measures are more sensitive to changes attributable to a training program. Popham (1988) adds that criterion-referenced test scores lead to clearer more understandable interpretations. Due to clarity and utility, Popham (1988) advocates using such measures "whenever possible by educational evaluators" (p.136).

Summary and Analysis

The review of the literature has covered a diverse number of areas relevant to the evaluation of adult learning. This section will summarize the important assumptions of andragogy that will play an integral role in this proposed evaluation design. Following this, a discussion about the importance of intrinsic motivation and its application to extrinsic motivational strategies will be presented. Shortcomings in the current field of evaluation models will be outlined as they relate to the issue of motivation and learning. A summary of data collection philosophies and methods will be given, concluding with

justification for the need of a new alternative evaluation design for motivation in relation to achievement in adult learning.

In order to design an appropriate evaluation, the characteristics of the target audience need to be taken into consideration. Literature from the field of andragogy tends to provide a portrait of the adult learner in contrast to child learners. The andragogical model presents five considerations important for curriculum designers and developers to keep in mind when doing their work: 1) individuals are more independent of others and want to be self-directed, 2) they are heterogeneous and have many life experiences to draw upon, 3) adults are ready to learn when they say they are ready to learn, 4) they appreciate focusing on specific problem-solving skills and 5) the aspects of internal and external motivation are important to acknowledge in their learning.

The first four of these assumptions are important and they further contribute to the fifth assumption, that of motivation in learning. This last assumption provides the focal point for this proposed evaluation design due to its interdependent relationship with the act of learning. Increases in motivation as the educational activity progresses is essential, as research (Wlodkowski, 1978) shows that when a learner's motivation to continue an educational activity is even stronger than the motivation to begin, there will usually be little tendency to stop prematurely.

Viewing motivation as a transitory state as opposed to a stable trait is useful for the educator. While approaching motivation as a stable trait leaves little for the educator to influence, the construct as a transitory state permits educators to take steps to enhance motivation. Two different aspects of motivation need to be considered: intrinsic and extrinsic. Educators can take steps based on different motivation theories that provide

possible factors that affect motivation. Intrinsic motivation issues such as self-directedness, self-improvement, control and belief of success or failure are all important in working with the adult learner. These issues need to be addressed when we develop various strategies in order to promote motivation in the learner. Futhermore, these intrinsic motivation issues can help formulate extrinsic factors to help increase motivation. Based on research findings relevant to motivation, Keller (1979) proposed his ARCS model that presents strategies dealing with attention, relevance, confidence, and satisfaction. Similarly, Wlodkowski's Time-Continuum Model offers strategies that have emerged out of research conducted specifically on adult learning in a classroom environment. Both are useful for implementing in educational interventions.

The six evaluation models presented earlier are valuable in their own right, but are lacking in that they do not explicitly address the issues mentioned above. The decision-oriented model focuses on providing data for judgments by decision-makers. Transactional evaluation concentrates on collecting information from stakeholders to assess program processes. Evaluation research focuses on educational effects and suitable instructional strategies. The goal-free evaluation model gauges curriculum effects not taken into consideration by curriculum designers and developers. Adversary evaluation presents competing views of an educational intervention. Each has a different focus, with none explicitly taking adult learners and motivation into consideration. While none of these models focus on the importance of assessing learners in an adult-learning context, Kirkpatrick's (1978) goal-oriented model seems most suitable for this task as it targets assessment of student progress and the effectiveness of the associated educational processes.

Kirkpatrick's Four-Level Model, is seen as the closest to the andragogical model in its conceptualization and will be used as a foundation for this proposed evaluation design. Kirkpatrick's collection of evaluation data in the form of reaction, behavior, learning and results is useful for assessing the effectiveness of a curriculum while being consistent with andragogical assumptions. Data from Level 1, reaction, questions how learners feel about the educational intervention and acknowledges that learner feedback is respected and important for the success of the educational intervention. Data from Level 2, learning, reinforces the andragogical assumption that the individual is ready to learn and confirms this success of this activity. Level 3 data, behavior, draws upon an adult learner's need to feel equipped for solving life-centered problems. Assessing level 4, results, acknowledges the fact that adult learners want to be able to apply their knowledge and skills to perform more effectively in daily life.

Although this goal-oriented evaluation model possesses strengths in focusing on learners and whether or not they meet the goals and objectives of an educational intervention, it is sometimes done with too narrow a focus and overlooking unintended effects (Posavac & Carey, 1992). In order to mediate this shortcoming, adopting a constructivist evaluation perspective in conjunction with the traditional objectivist approach is useful. To begin with, constructivism and andragogy are similar in focusing on the experience of the individual in a learning environment. The andragogical model shares constructivism's focus on the learner, where principles of learner independence, diversity, readiness, problem-centeredness and motivation are all issues that constructivism acknowledges (Jonassen, 1991). Another aspect of constructivism that can be used to mediate the constraints of a traditional objectivist perspective is the

encouragement of learners to take part in their own learning experience by setting personal learning goals at the outset of the educational intervention, resulting in individual empowerment. Allowing learners to acknowledge their personal goals can alert educators to unintended effects of a given curriculum and allow new perspectives to emerge.

Data collection with the above issues in mind can be challenging. In order to balance the objectivist and constructivist philosophies, a combination of data collection methods and instruments seem appropriate to triangulate results, such as objective paper-and-pencil tests and performance assessment. The two compensate for each other's weaknesses: where the paper-and-pencil test may not provide a realistic context for using knowledge, performance assessment is strong in this respect; while adequate content coverage is a weakness of performance assessment, it is a strength of the paper-and-pencil test (Gall et al., 1996). In addition, the use of such a triangulation strategy is useful for avoiding dependence on one data source or method, which can weaken validity and credibility of findings (Patton, 1990).

A review of the literature does not reveal any andragogical evaluation model that currently embodies the many issues mentioned above. None explicitly take into account the specific characteristics of the adult learner, such as self-directedness, their experience, readiness to learn, orientation towards learning or motivation to learn. While the conceptualization of Kirkpatrick's Four-Level Model of evaluation is congruent with andragogical assumptions, it was not developed with these issues in mind. The motivational strategies reviewed above are used by curriculum designers and developers, but none have been integrated into a systematic adult learning evaluation framework for

use in classroom-based educational interventions. This situation calls for an evaluation

design that acknowledges the importance of motivation in relation to achievement.

A PROPOSED EVALUATION DESIGN OF
MOTIVATION AND ACHIEVEMENT

Description of the Model

In an attempt to take into account the psychological and sociological complexities

of motivational issues related to short-term classroom-based educational interventions,

the Evaluation Design of Motivation and Achievement is proposed. Drawing upon

measures of learner motivation and achievement in the form of self-report tests and

performance assessment, this formative evaluation design provides guidelines for data

collection, data analysis as well as suggests possible motivational strategies and

techniques for implementation.

The proposed Evaluation Design of Motivation and Achievement is based on

Kirkpatrick's Four-Level Evaluation Model but includes motivation as a main aspect of

evaluation. In the following section, a comparison between parameters of Kirkpatrick's

Four-Level Model and the proposed Evaluation Design of Motivation and Achievement

will be made (see Table 9).

Although the proposed Evaluation Design of Motivation and Achievement is

consistent with the Four-Level Evaluation Model in collecting similar data, some

adaptation is necessary in order to highlight the importance of learner motivation in

evaluation. Kirkpatrick's Four-Level Evaluation Model provides guidance on what types

of information to collect in order to carry out an effective evaluation: reaction, learning,

behavior and results. These four levels are addressed by the proposed Evaluation Design

of Motivation and Achievement in the following ways. *Reaction* will be measured by

collecting information from learners regarding personal goals and expectations, their

personal weaknesses and motivation levels prior to beginning the educational

intervention. As well, at the conclusion of the educational intervention, learners will be

questioned about whether they met their personal goals and addressed their previously

identified weaknesses as well as gather information about motivation and feedback on

how to improve the educational intervention.

Measuring *learning* will take place by investigating prior knowledge on the target

content as well as level of knowledge gained at the conclusion of the educational

intervention. *Behavior* will be measured using performance assessment in order to gauge

whether the target knowledge, skills or attitudes have been acquired due to the

educational intervention. *Results* of the educational intervention will be based on the

concluding motivation levels of the learners. This, in conjunction with their learning

results, will allow the evaluator to make assumptions on the future results of the

educational intervention.

As illustrated above, Kirkpatrick's model provides a framework for this proposed

evaluation design. In addition to using the four levels of Kirkpatrick's model, the

proposed Evaluation Design of Motivation and Achievement adds new components and

can be seen as an extension of Kirkpatrick's model.

This proposed Evaluation Design of Motivation and Achievement is based on

assumptions derived from the literature described earlier:

- Adult learning assumptions are important to acknowledge in understanding the target audience of an educational intervention. Adult learners are: 1) more independent of others and want to self-direct, 2) heterogeneous and have many life experiences to draw upon, 3) ready to learn when they say they are ready to learn, 4) focused on specific problem-solving skills and 5) motivated by internal and external motivations (Knowles, 1990).

Table 9. Comparison and Contrast Between Parameters of Kirkpatrick's Four-Level Model and the Proposed Evaluation Design of Motivation and Achievement

Parameters	Kirkpatrick's Four-Level Evaluation Model	Proposed Evaluation Design of Motivation and Achievement
Reaction	Deals with how learners feel about the educational intervention and provides feedback that helps evaluate the educational intervention as well as collects suggestions for future improvements.	Prior to beginning educational intervention: Collects data from learners regarding personal goals and expectations, personal weaknesses and motivation levels. At the end of educational intervention: Collects data about meeting previously identified personal goals and expectations, personal weaknesses as well as gathers information about motivation and feedback on how to improve the educational intervention.
Learning	Deals with the extent of learner attitude/knowledge/skills change due to the educational intervention. Basic questions asked: What knowledge was learned, what skills were developed or improved and/or what attitudes were changed?	Prior to beginning educational intervention: Collects data on prior knowledge of target content. At the end of educational intervention: Collects data on knowledge gained throughout the educational intervention.
Behavior	Deals with extent of behavior change due to the educational intervention. Basic question asked: how much and what type of change is attributable to the educational intervention?	During the educational intervention: Collects data to assess whether target knowledge/skills/attitudes were acquired due to the educational intervention.
Results	Deals with the final results that occurred because the participants attended the educational intervention. Results may include increased productivity, better quality, lower costs, more competition, reduced accidents, improved morale.	At the end of educational intervention: Collects data to assess long-term impact of educational intervention using measures of motivation.

- Research has shown that individual motivation is a necessary component to adult learning, playing an important role in an individual's positive attitude towards knowledge seeking (Wlodkowski, 1985; Phares, 1991). Increases in motivation as the educational activity progresses is essential, as research shows that when a learner's motivation to continue an educational activity is even stronger than the motivation to begin, there will usually be little tendency to stop prematurely (Wlodkowski, 1978). In addition, individuals who are motivated will be more likely to have a future interest in what they have learned and be more likely to use what they have learned, possibly becoming life-long learners (Wlodkowski, 1985).

- Motivation is a transitory state affected by both intrinsic and extrinsic factors. Intrinsic issues are composed of characteristics such as learner self-directedness, self-improvement, control and belief of success or failure. Extrinsic issues are composed of motivational strategies that influence these intrinsic issues and encourage motivation.

These three assumptions form the basis for the proposal of a systematic evaluation design

for use in classroom-based adult-learning educational interventions. In order to carry out

this proposed evaluation design, the following section presents guidelines on when to

collect data as well as what types of data to collect.

Procedure for Implementing the Design

The following section presents how the proposed Evaluation Design of

Motivation and Achievement will be implemented. Two types of valuable data are

collected throughout an educational intervention for evaluation purposes: measures that

target personal issues of motivation and measures that target prior/learned knowledge.

Paper-and-pencil measures of motivation and achievement are gathered prior to

beginning the educational intervention. At the mid-point of the curriculum, performance

assessment gauges the status of on-going learner motivation and achievement. At the

conclusion of the educational intervention, motivation and achievement measures are

again gathered. When data from these three critical periods are collected, the Evaluation

Design of Motivation and Achievement provides a framework for analysis and targeting

necessary revisions. If collective results find learner motivation to be lacking at either the beginning, mid-point or end of the educational intervention, the proposed design presents appropriate motivational strategies for improvement. The Evaluation Design of Motivation and Achievement is a five-step process as described below and summarized in Table 9.

Step 1: Data Collection at the Start of the Educational Intervention

At the beginning of the educational intervention, prior to the start of any instruction, administer a motivational pretest to establish a baseline indicator. This proposed design suggests evaluating motivational issues related to reason for attendance, attitude towards learning and enthusiasm for upcoming learning. This motivational pretest also collects information about learner's personal goals for the upcoming educational intervention as well as personal barriers to learning. This information provides valuable data for the instructor in preparing how best to meet diverse learner needs.

The humanistic theories of motivation presented earlier provides guidance in helping to create questionnaire items for use in this motivation pretest and posttest. Select concepts from the theories of self-actualization , achievement motivation, self-efficacy, attribution theory and internal-external locus of control as the basis for investigating learner motivation. Self-actualization theory indicates that a learner is focused on self-fulfillment and learning for the sake of learning in order to realize their full potential (Tough, 1971). Associated factors with this theory are elements of exploration, creativity and self-directedness. Individuals are seen as wanting to set their own learning pace and put their own structure on their learning (Penland, in Wlodkowski, 1985). Include open-

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Table 9

Guidelines for Implementing the Evaluation Design of Motivation and Achievement

	Construct Queried	Data Collection Instrument/Method	Purpose
Step 1: At the start of the educational intervention	Motivation Achievement	Written self-report Written self-report	• Baseline–measure motivation • Setting personal goals and identifying weaknesses • Baseline-measure prior knowledge of broad content goals
Step 2: During the educational intervention	Motivation Achievement	Performance assessment	• Gauge level of interest, confidence and readiness • Allow increase in learner motivation by realizing competence through performance • Allow demonstration of knowledge and skills in safe environment
Step 3: Ending the educational intervention	Motivation Achievement	Written self-report Written self-report	• Compare to previous motivation measure • Predict likelihood of using content in future • Compare to pre-test to indicate if curriculum affected a change in knowledge
Step 4: Data analysis	• Using Analysis Matrix of Motivation and Achievement, determination of areas of improvement, i.e., motivational or achievement aspects of the curriculum		
Step 5: Selecting revisions	• Selection and implementation of techniques to improve curriculum, i.e., motivational or instructional design techniques		

ended questions to assess the learner's sense of personal goal-setting and expectations as part of Self-actualization theory.

Achievement motivation theory helps in investigating the learner's self-confidence and desire to undertake challenging goals that are possible to attain. Ask learners about their drive to doing things better, faster and more efficiently as part of this motivation theory (Alschuler et al., 1970). Phares (1991) defines self-efficacy as "the belief that one can successfully execute a given behavior" (p. 362). Collect data regarding the learner's desire to set personal goals and dependence on self-appraisal of abilities. The stronger the perception of self-efficacy, the greater the commitment and effort expended to carry out the behavior. Investigate the learner's personal reasons for success and failure as presented in Attribution theory: ability, effort, task difficulty, luck and strategy (Stipek, 1988). As well, choose motivation elements from Internal-External Locus of Control theory, where learners are either internal and attribute success and failure to themselves, or external and attribute success and failure to their environment of factors beyond their control.

In addition to a motivational measure, administer a pretest to all learners and gauge their prior knowledge of the instructional content. The items on such a measure depend on the nature of the objectives of the educational intervention offered. They are not exhaustive, but investigate the learner's knowledge on broad topics of the educational intervention.

Step 2: Data Collection During the Educational Intervention

Performance assessment is used to measure both learner motivation and achievement. At the midpoint of the educational intervention, ask questions such as: Is

the intervention sustaining learner interest? Are learners confident in their skills? Are they ready to apply what they have learned? Timely reporting of this is critical because if any changes need to be made, they must be done quickly before the conclusion of the program.

For motivational measures, observe learners as they engage in performance assessment and gauges their level of interest, confidence and readiness. Performance assessment allows the learner to demonstrate the knowledge and skills learned, allowing authentic assessment of an individual whom might not be able to demonstrate that knowledge in a real-life situation. In order to shift the learner's focus from their own performance, impress upon the learners that the assessment is focused on the instruction and not their success in the educational intervention. Take note that in addition to gauging learner progress, performance assessment fulfills a motivational component for learners: motivational planning principles state that success in performance situations at the midpoint of an educational intervention increases learner motivation and helps the individual realize their competence resulting in greater self-confidence.

While learners are engaged in an activity, take note of learner behavior such as interest, enthusiasm and confidence. At the end of the day, analyze the results for decision-making later on. An important aspect of this performance assessment component is to share the results with the learner. Ask for their feedback on the outcome and allow them the opportunity to self-evaluate. This activity emphasizes the important andragogical design considerations of allowing a mutual re-diagnosis of needs and mutual measurement of a curriculum.

Step 3: Data Collection at the Ending of the Educational Intervention

Take a self-report motivational measure with all learners at the conclusion of the

educational intervention. This terminal measure has two functions: (a) to compare with

the previously gathered motivational data in order to gauge if any difference has

occurred, and (b) to predict the learner's likelihood of using the knowledge in the future.

If a learner's motivation level has decreased, two conclusions can be made at this point:1)

steps must be taken to revise the latter part of the training program in order to bolster

motivation; and 2) learners will not apply what they have learned in the educational

intervention. Motivation at this point is important for the following reasons.

In addition, conduct a pencil-and-paper posttest achievement measure with all

learners. Cumulative knowledge of the educational intervention will be investigated and

any differences in the pre/posttest scores will indicate if the curriculum was able to

impart key concepts to learners.

Step 4: Concluding Data Analysis

In order to target limited resources for revision, the following analytical

framework is useful. The focus of the Evaluation Design of Motivation and Achievement

rests on motivation and achievement results of the learner. Throughout the educational

intervention, four possible learner outcomes can occur using the Analysis Matrix of

Motivation and Achievement provided (see Figure 2).

Quadrant I (High motivation-high achievement); **Quadrant II** (high motivation-

low achievement); **Quadrant III** (low motivation-high achievement) and **Quadrant IV**

(low motivation-low achievement). Depending on the previously determined criterion-

referenced items, code the motivation and achievement results from each learner's

measurements according to each period of the educational intervention (beginning, during, ending).

Using this basic method of analysis, assess which areas of the educational intervention improvement to target with the limited resources available. If the majority of learners fall in **Quadrant I** (high motivation/high achievement), subjective and objective measures indicate high motivation and high achievement. This would be an optimal situation and indicates the educational intervention should continue in its present form with no revisions of any kind. If the majority of learners fall in **Quadrant II** (high motivation/low achievement), subjective and objective measures indicate high motivation and low achievement. This indicates that resources need to be directed at improving instruction of curriculum content goals and objectives. If the majority of learners fall into **Quadrant III** (low motivation/high achievement), subjective and objective measures indicate low motivation and high achievement. This indicates use of motivational enhancement strategies suggested by the Evaluation Design of Motivation and Achievement. Improvements upon instruction of curriculum goals and objectives are not necessary. If the majority of learners fall in **Quadrant IV** (low motivation/low achievement), subjective and objective measures indicate low motivation and low achievement. This indicates use of motivational enhancement strategies suggested by the Evaluation Design of Motivation and Achievement. In addition, revisions to instruction of curriculum goals and objectives are necessary. Keep in mind that any educational intervention that evidences such results in learners is clearly not maximizing its instructional potential and must be critically examined.

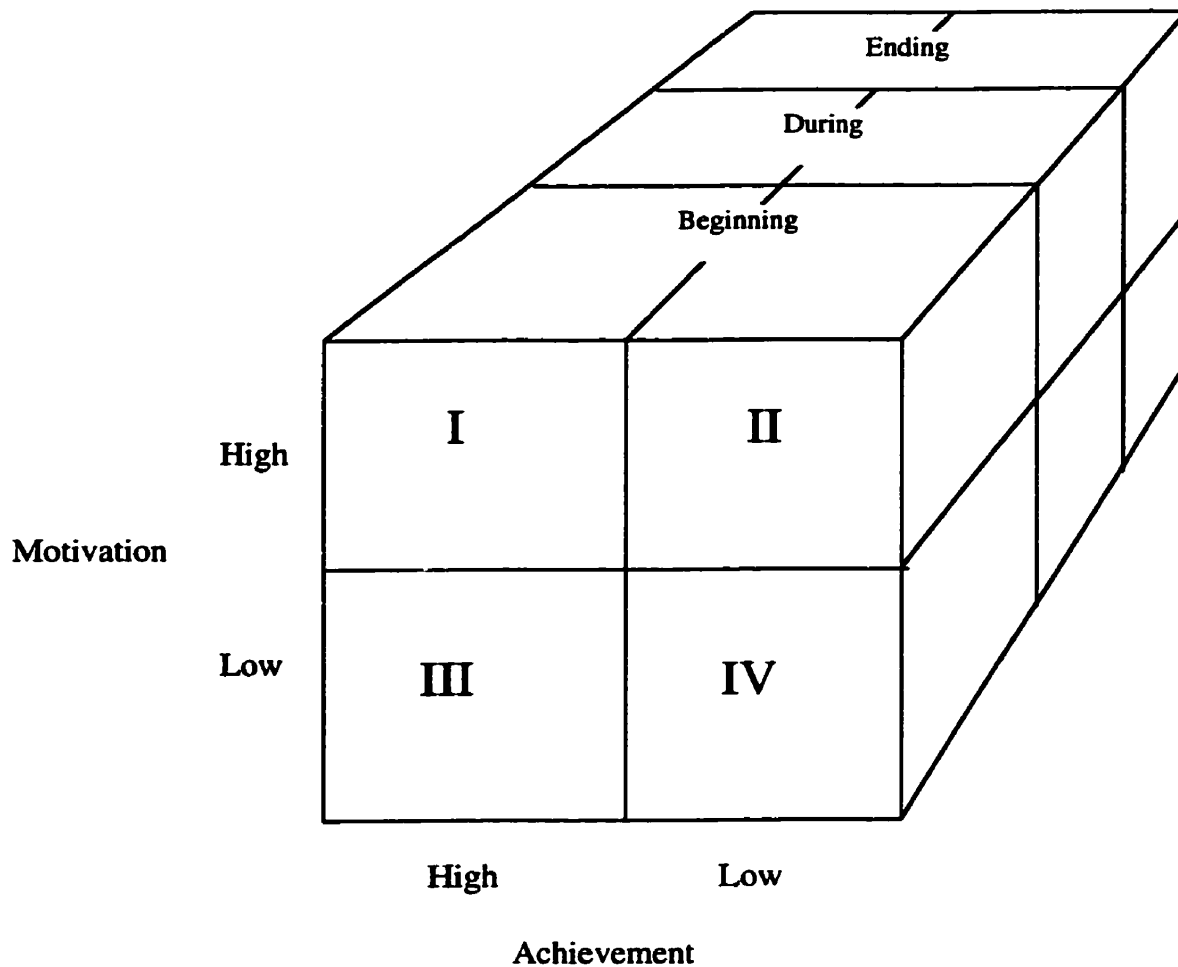Figure 2. Analysis Matrix of Motivation and Achievement.

Figure 2. Analysis Matrix of Motivation and Achievement. Using the Evaluation Design of Motivation and Achievement's matrix provides guidance for evaluators in possible results for data collection.

In its function as a formative evaluation tool, the Evaluation Design of Motivation

and Achievement provides progress checks throughout the educational intervention. The

data collected is meant as a starting point for discussion among the program's staff and

planners who have invested time and effort in designing and developing the instruction in very specific ways.

<u>Step 5: Selection of Revision Strategies</u>

For targeted indications on where and how to revise the curriculum in terms of motivational aspects, look at the motivation measurements in relation to their critical periods. If motivation measures are low at the "Beginning" critical period, target revisions at learner attitudes and needs. If motivation measures are low at the "During" critical period, target revisions at learner stimulation and affect. If motivation measures are low at the "Ending" critical period, target revisions at learner competence and reinforcement.

The Evaluation Design of Motivation and Achievement is flexible enough in offering general strategies for revising instruction in order to enhance motivation or specific strategies appropriate to the critical period of the educational intervention. Refer to Keller's ARCS model for general strategies to follow or choose more targeted strategies based on Wlodkowski's Time-Continuum Model. Keller's ARCS model advocates using all four of his strategies to enhance motivation in instruction: attention, relevance, confidence and satisfaction. Gain the attention of the learner through various strategies mentioned earlier. The instruction should clearly indicate how the content of the educational intervention is useful for them. Offer learners the opportunity to build confidence with their new knowledge, and follow that by allowing learners the opportunity to feel satisfied with their performance.

If strategies of the ARCS model is too general for implementation, select strategies from the Time-Continuum Model of Motivation that are more specific to each

critical period of an educational intervention. The strategies focus on different aspects of adult learning, addressing either learner attitudes, needs, stimulation, affect, competence or reinforcement depending on the critical period of the educational intervention. If achievement measures are low at any point, revise the curriculum using basic instructional design strategies to better communicate objectives and outcomes to learners.

LIMITATIONS AND FUTURE DIRECTION

Despite the fact that this Evaluation Design of Motivation and Achievement's attempts to be comprehensive, limitations do exist in its formulation. This section will address the following seven limitations.

First, although the Evaluation Design of Motivation and Achievement makes use of research from a wide variety of areas, the contributions of cognitive psychology have not been explored. Although these are addressed somewhat by the motivation theory of self-efficacy, more in-depth cognitive theory is necessary, providing a stronger basis for its formulation as well as further areas to explore. One possibility of the Evaluation Design of Motivation and Achievement is to have individuals attend to motivational issues in their own learning. It is expected that having to answer self-report measures makes the respondent more conscious of the construct and its importance in learning. If such a self-monitoring activity can be instilled in learners, the Evaluation Design of Motivation and Achievement can become a mental framework for learners to implement in any endeavour they choose, ultimately resulting in self-regulatory behaviour.

Second, the Evaluation Design of Motivation and Achievement's perspective of motivation as a transitory state poses an important question: How long will this motivation at the end of a learning activity last? The Evaluation Design of Motivation

and Achievement expects high motivation at the end of a learning activity to be a positive indicator for continued interest and likely use of the target skills, but is there a finite period for this lasting effect? This question needs to be addressed, with the results perhaps being used to indicate the optimum time for follow-up sessions on the target topic. At minimum, such research can indicate the best time to initiate follow-up evaluation, itself a possible on-going strategy of sustaining long-term motivation.

Third, that in order to follow adult learning principles, it would seem necessary to develop a more inclusive form of evaluation. Although the Evaluation Design of Motivation and Achievement advocates involvement of learners in evaluation (e.g. setting personal goals, responding to performance assessment measures), this methodology does not fully adhere to the andragogical model. Addressing this issue may necessitate some collaborative evaluation effort, perhaps in the form of open evaluations where each learner contributes to a shared understanding of group motivation in relation to achievement. This would fit with the concept of learning as complex, comprehensive and collaborative initiatives. As well, more emphasis would be placed on the social aspect of learning: while learner independence is allowed in individual work, the collaborative component of learning is also acknowledged through such an evaluation strategy.

Fourth, literature points to motivational differences between individuals in terms of cultural background and gender. The Evaluation Design of Motivation and Achievement currently treats individual learners as homogeneous in its analysis where individual differences do not exist. This indicates the importance of integrating some mechanism for acknowledging such differences, resulting in valid data for evaluation

purposes. This mechanism may take the form of weighting specific items on self-reporting questionnaire items to address these issues.

Fifth, current motivation instruments have not been entirely satisfactory in collecting valid and reliable measures. As mentioned above, the sample questionnaires and coding key provided are no different. What is significant about them is their basis in humanistic motivation theory and adult learning principles. If no standardized measure exists or can be adapted, sample questionnaires need to be further researched in order to establish their validity and reliability.

Sixth, in addition to providing data for the evaluator to use, methods for the facilitator of the sessions to also benefit from the information have not been thoroughly explored. The focus of the Evaluation Design of Motivation and Achievement is on evaluation aspects and implementing instructional improvements, but the facilitator can also make use of the motivation and achievement measures to help address the diverse needs of the learners. The Evaluation Design of Motivation and Achievement might someday offer suggestions on how the facilitator might use this data to address individual weaknesses of learners.

Seventh, the Evaluation Design of Motivation and Achievement has not been implemented. Until the proposed design has been applied, its value and feasibility as an evaluation framework has yet to be determined. While the design has been researched, implementation may show that the measure of motivation in relation to achievement does not sufficiently indicate learner progress in an educational intervention. As well, components to the proposed design may prove to be too time-intensive to manage, such

as developing adequate motivational questionnaires and carrying out individual performance assessment with each learner.

CONCLUSION

This Evaluation Design of Motivation and Achievement is an alternative that attempts to integrate important motivational issues in adult learning and formative evaluation techniques, using a combination of constructivist and objectivist philosophies. By following the Evaluation Design of Motivation and Achievement, the evaluator will have guidance in how to carry out an evaluation within an andragogical framework. This focus on motivation fulfills a void in evaluation models that overlooked the importance of an individual's personal learning experiences in any given educational intervention. It is hoped that the Evaluation Design of Motivation and Achievement provides a meaningful and useful lens through which to view evaluation of classroom-based adult learning, allowing researchers, educators and evaluators to improve educational interventions for future learners. With increased research into the topic, there is not doubt that great inroads will be made towards ensuring effective and efficient education for adult society.

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