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ASSESSING ADULT LEARNING AND LEARNING STYLES

E. Paulette Isaac

Abstract: Adults have different learning styles which can either enhance or deter their learning. In the conversation that follows, I discuss the utility of assessing adult learning and the diversity of learning styles. Adult education literature is replete with discussions on characteristics of adult learners and adult learning and development. But how do we actually know if adults gained the knowledge they set out to learn? We know that there are several factors that should be taken into consideration when facilitating adult learning, but as adult educators and practitioners of the field, it is equally important that we learn and/or know how to deploy various approaches in assessing adult learning. In this chapter are brief discussions on adult learning, learning styles, and learning assessments.

9.1 INTRODUCTION

Adults have long engaged in learning activities. However as humankind developed, so did a more formal means of education. Adults continue to participate in adult education for a number of reasons; most notably, job enhancement (Fujita-Stark, 1996; Merriam, Caffarella, & Baumgartner, 2007). The motivation to participate is as diverse as the learners themselves. Adult learners each bring to the learning activity or program different approaches to learning and different learning styles. Interconnected to the diversity of learning styles and motivations for learning, adult educators should be able to assess the outcome of the learning activity in order to determine if learning goals and/or objectives have been achieved. In such instances, a variety of learning assessments or instruments can be utilized. There are a number of reasons why adults engage in learning activities, such as learning a new hobby or for the social interaction it allows. Regardless of adults' motivations to learn, it is important to assess what they learn. How do we, as adult educators, know adults have acquired the knowledge they needed or sought; or if they met our learning objectives? More often than not, a learning assessment is used. Many assessments take the form of a test, presentation, or a portfolio. Additionally, in an effort to enhance adults' learning, some instructors use a variety of instructional strategies to attend to the different learning styles of the students in the classroom. Therefore, instructors might use a learning styles instrument to assist students in understanding and maximizing their learning potential.

In this chapter, I will explore methods to assess adult learning and preferred modes of learning. First, we begin with a brief examination of adult learning. Next, we turn our

attention to learning styles. Finally, we examine assessment of adult learning and learning styles.

9.2 ADULT LEARNING

Teaching should facilitate the personal and professional growth and development (Galbraith, 2004) and possibly the transformation of learners. In order for this to occur, significant learning must take place. Learning is a fundamental and basic characteristic of humans (Long, 1985, 2004). Adults must often engage in learning activities to gain new knowledge or develop skills for professional or personal benefits. Adult learning has been examined from a variety of aspects including aging and development (Clark & Cafferalla, 2000), participation, motivations, barriers (Boshier, 1991; Darkenwald & Valentine, 1985; Isaac, Guy, & Valentine, 2001), and spirituality (English & Gillen, 2000; Tisdell, 2003; Vogel, 2000), just to name a few. Despite the fact that numerous studies exist to broaden our understanding of adult learning, there is no single theory that fully explicates our knowledge of adult learners or their learning processes (Merriam, 2001). Merriam further indicates we have a “mosaic set of theories, models and sets of principles and explanations that, combined, compose the knowledge base of adult learning” (p. 3).

According to Long (2004), any discussion of learning should indicate whether or not the learning activities are sponsored by a group, are a non-group sponsored activity (i.e., self-directed learning), or a combination of the two. However, one common theme among definitions of learning includes a process. For example, Long (2004) defines learning as a cognitive process that is influenced by a variety of methods which include “(a) existing or prior knowledge that the learner has; (b) attitudes and beliefs, held by the learner, toward the source, content, topic, and mode of presentation; and (c) the state of the learner” (p. 31). This suggests that adults engage in learning in a variety of settings including both formal and informal.

Formal learning is generally associated with a university or college, or some institutional type of environment, whereas informal learning can be any learning activity which occurs outside the curricular constraints and structure of formal settings (Livingstone, 1999; Mündel & Schugurenksy, 2008; Shrestha, Wilson, & Singh (2008). Livingstone states that the “basic terms of informal learning . . . are determined by the individuals and groups that choose to engage in it” (p. 51). Generally speaking, no external criteria or authorized instructor exists in informal learning (Livingstone). For purposes of our discussion, the focus will be formal adult education and learning. This encompasses post-secondary education as well as adult basic education and literacy, ESL, and ESOL.

Knowles (1980) provides five assumptions of adult learners through andragogy, the art and science of helping adults learn. He believes (a) adults are intrinsically motivated to participate in adult learning activities, (b) they bring a wealth of experience to the learning environment, (c) their readiness to learn is related to a developmental task or social role, (d) they are problem-oriented, and (e) their self-concept moves from one of dependence to

independence, which leads to forms of self-direction. Through self-directed learning, as described by Knowles (1975), adults take the initiative to learn, formulate learning goals, identify human and/or material resources for learning, choose the appropriate strategies for learning and evaluate their learning outcomes.

Other theories of learning include the cognitive, behaviorist, humanist, constructivist, social, and transformative. Each of these theories has a different view of the learning process, which includes the locus of learning, purpose of education, roles of educators, and manifestations of learning (Merriam & Cafferalla, 1999). Processing, storing, and retrieving information describe the cognitive learning approach. A key component of behaviorist learning is control, whereby the instructor controls what knowledge adults will learn. Supporters of the humanist theory believe in a more holistic approach to learning, while the constructivist theory supports the notion of learners building upon their knowledge. With social learning, adults acquire knowledge based on their interaction with others. Hence, the social setting is of great significance. In transformative learning (Mezirow, 1978), individuals experience disorienting dilemmas which can change their perspective or beliefs. As intimated in this discussion, adult learning is multifaceted. However, knowledge of learning styles can promote the learning process.

9.3 LEARNING STYLES

Each person has personal characteristics such as race, gender, cultural beliefs, and inherited traits that set us apart from others; and these characteristics impact our learning. Therefore, it is expected that, in any adult classroom, learners will exhibit a variety of personal characteristics that will influence their learning and their preferred learning styles. Adult learning styles can help educators determine which strategies will most likely benefit adult learners (Kostovich, Poradizisz, Wood, & O'Brien, 2007). Interestingly, Rochford (2003) discovered that "freshmen taught to use study skills that were responsive to their unique learning styles achieved significantly higher grade-point averages than freshmen who studied traditionally" (p. 669).

Within educational circles, the research on learning styles has gained ground during the past two decades (Lemire, 2000). Learning styles can be consistent across a variety of tasks and generally remain stable (Tucker, 2003). They can influence how information is processed and problems are solved. Davis and Franklin (2003) state, a learning style is a "biologically and developmentally imposed set of personal characteristics that make the same teaching (and learning) methods more effective for some and less effective for others" (p. 1). Lemire also incorporates a biological component in his description of learning. Thus, a learning style reflects genetic proclivities representative of biological origins that are innate in nature. This suggests, therefore, that observations alone cannot determine one's learning style. Learning style describes "the way learners begin to concentrate on processing, internalizing, and retaining new and difficult academic information" (Honingsfield & Dunn, 2006, p. 15) or a person's individual characteristic approach to learn-

ing (Misko, 1994). Smith and Dalton (2005) challenge this latter definition, because it implies that learning styles are static and consistent across all learning situations. They indeed make a valid point, because learning styles can vary depending on the content, instructor, and context. Conti and Kolody (2004) differentiate between learning styles and learning strategies. They explain that, “learning styles refer to the inherent ways that people process information” while “learning strategies deal with the way people approach specific learning situations (p. 184). Learning styles also enable educators to understand how adult learners approach, acquire, and use information in a learning situation (Ausburn & Brown, 2006).

There are challenges in identifying adults’ learning styles. Some problems derive from the numerous factors used to identify learning styles (Lemire, 2000; Pitts, 2009). Nevertheless, using and understanding how learning styles work can be useful for a variety of reasons. In fact, Galbraith (2004) identifies the openness of using a “variety of teaching strategies and approaches” (p. 6) as a characteristic of a good teacher of adults. Conti and Kolody (2004) contend that knowledge of adults’ learning strategy preferences by both the learner and the instructor can lead to academic success in the classroom. Undoubtedly, based on how it is used, knowledge of adults’ learning style can prove beneficial to both the educator and learner.

One possible benefit of knowing how a learner processes information is that it allows educators to use techniques which can then maximize adult learning. According to Kostovich, Poradizisz, Wood, and O’Brien (2007), learning styles can be “matched to teaching strategies to maximize students’ comfort in the learning situation, or teaching strategies can be deliberately mismatched to students’ learning styles to increase their repertoire of learning skills” (p. 227). And, while this “matching hypothesis” (Coffield, Moseley, Hall, & Ecclestone, 2004, p. 39) is popular, it does have its critics. For example, Dembo and Howard (2007) question whether students benefit when instructional techniques match their preferred learning style and if doing so leads to improved concentration, better memory, enhanced self-confidence, and less anxiety among learners. This sentiment is espoused by Smith, Sekar, and Townsend (as cited by Coffield, Moseley, Hall, & Ecclestone), who state for every research study that supports the matching hypothesis, there is another one which rejects it. As this discussion suggests, educators should consider using different instructional techniques, keeping in mind that in doing so, they may or may not enhance adults’ learning.

Further skepticism about matching exists in other studies. For example, in his study of 201 students enrolled in one of eight management courses at a small liberal university, Loo (2004) found that learning styles were not a strong indicator of learning preferences. Hence, the correlation between learning styles and preferences were weak. The findings on matching learning styles and instructional methods have been inconsistent. Dembo and Howard (2007) concluded that,

With such a long and storied history of different approaches, one would expect that if matching learning styles could produce measurable and consistent improvements in

learning we would have ample evidence to this effect. Nevertheless, textbooks and entrenched proponents continue to trumpet the virtues of various forms of learning styles-based approaches, seemingly unconcerned with the unimpressive track record that such approaches possess. (p. 105)

Despite the strength of their argument, Dembo and Howard believe that instructors should be sensitive to the individual differences of learners and attempt to employ diverse teaching methods.

9.4 ADULT LEARNING AND LEARNING STYLES ASSESSMENTS

There are numerous strategies for assessing adults' learning and their learning styles. Often the words evaluation and assessment are used interchangeably. Moran (1997) differentiates the two by defining evaluation as "using measurements to reach judgment regarding how well a person or group of persons has achieved learning goals." Conversely, assessment "refers to using measurements to describe a learner's achievement and to make recommendations for additional learning activities" (p. 11). For Reeves (2000), the focus of evaluation is on judging a program's worth and effectiveness. On the other hand, an assessment instrument measures a student's learning as well as other human characteristics and is essential if we seek to enhance the teaching and learning process. Depending on the context and content, assessments can be conducted before, during, and/or after a learning episode.

9.4.1 Assessing Adult Learning

Educators use a number of strategies to assess adults' learning. However, assessment development is a perpetual challenge for educators, because of concerns of assessment validity and fairness to learners (Benson, 2003). Assessments are commonly categorized as either formative or summative (Boston, 2002; Huang, 2006). Hanson, Millington, and Freewood (as cited by Benson, 2003) add a third category—diagnostic. Formative assessment refers to measurements and conclusions made throughout a course. Instructors will use a formative assessment if their goal is to improve students' learning (Huang). In such cases, students will often receive written feedback from the instructor several times throughout a course or term through exams, quizzes, or written assignments. However, oral feedback can be provided to determine students' knowledge base through the use of class discussions or games. Formative assessments allow educators to make adjustments to their syllabi, the content, and the instructional techniques used. For learners, formative assessments can help them reduce course anxiety and gauge possible gaps that exist between desired learning goals and their current knowledge level (Boston).

Summative assessments, as the title implies, assess a learner at the conclusion of a learning unit. Examples of summative assessments include portfolios (Huang, 2006), bar

exams, and a final course examination at a college or university. In fact, Huang indicates that portfolios are one of the popular assessment tools used in today's teacher education programs. An advantage of using a portfolio is that it incorporates "both formative and summative measures" (Huang, p. 6). Some teacher education programs now use electronic-portfolios (E-portfolios), which allow learners to collect and organize their portfolio documents in different multimedia formats (Huang). Crowe (2000) warns, however, "that summative testing may be counter-productive to the achievement of a high quality of learning" (para. 8).

Diagnostic assessments, generally conducted early in a course, can identify possible learning challenges, areas requiring development, and the learner's aptitude (Hanson, Millington, & Freewood, as cited by Benson, 2003; Sieber, 2009). In an online course, diagnostic testing allows for immediate and performance-based feedback (Siever). Diagnostic assessments enable instructors to recommend early interventions or support services (i.e., writing lab) that can enhance learners' success.

There are additional classifications of assessments including traditional, alternative, and performance (Benson, 2003). Traditional assessments measure "learning at the lowest levels of Bloom's cognitive domain," alternative assessments measure "learning at the higher-order thinking of the cognitive domain," and performance assessments measure "learning in the psychomotor domain" (p. 70).

Crowe (2000) dichotomizes assessments in terms of learning style. She examined learning in what she described as teacher-directed and self-directed formats. In the former, educators have complete control of the learning assessment. Within the teacher-directed learning format, assessment practices generally are easy to administer and appear to be fair (Crowe). However, lower-level cognitive skills become the major focus. In addition, certain course topics might be overlooked. Self-directed learning formats, as discussed earlier, allow learners to determine their evidence of learning as well as their evaluation of that learning. Many times, this is completed in conjunction with the instructor, a peer, or by the learner.

In addition, assessments can be objective or subjective in nature. When assessments are subjective, they cause concern over adequacy, reliability, and validity. However, Moran (1997) believes that these issues also ring true when assessments are objective. An instrument is objective if "different people would score the answers for the same person on the same test in the same way" (Moran, p. 15). Adequacy occurs when a "test measures all the outcomes that learners were trying to achieve within a unit of study" (Moran, p. 16). As with any type of instrument, reliability refers to the consistency of scores an instrument produces when taken by different users over time. An instrument is valid when it measures what it claims to measure.

Some assessment instruments have come under scrutiny for their lack of validity and reliability. In fact, Dembo and Howard (2006) practically devalue the use of some instruments. Because of the number of learning styles theories and instruments "it becomes nonsensical to try to discuss the construct validity would need to be assessed based on the theory and instrument of each of the models" (p. 104). Along those same lines, Coffield,

Moseley, Hall, and Ecclestone (2004) state that some “of the best known and widely used instruments have such serious weaknesses (e.g., low reliability, poor validity and negligible impact on pedagogy)” (p. 138) that their use should be discontinued. Many researchers use face validity to confirm what they are measuring. However, there are other dimensions to validity that should be taken into consideration “when assessing whether a particular learning styles instrument is a truly valid evaluator of what it purports to measure” (Dembo & Howard, p. 103). The fact that some instruments fail to measure their stated purpose, some instruments are useless and should be used with great caution.

9.4.2 Assessing Learning Styles

According to Pitts (2009), learning styles research emerged from the field of psychology as researchers in the field began to explore individual differences. In the midst of their research, psychologists began “developing inventories and other measurements to identify” (p. 225) learning styles. Learning-styles instrument are used to “effectively differentiate instruction” (Pitts, p. 227). Once educators have identified students’ approaches to learning, they can employ different strategies to meet the needs of diverse learners. Numerous instruments have been developed which help us to understand our adult learners. Many burst onto the scene in the latter part of the 20th century (Pitts). Some will be discussed later in this chapter and, of course, elsewhere in this book. Although there are instruments available to assist educators, some concerns exist regarding the usage of the knowledge gained from these inventories. For example, Lemire (2000) points to the concerns of treatment options once a learner’s aptitude is determined and a lack of detailed information or guidance to assist instructors with their teaching and adults with their learning. Nonetheless, depending on their use, they can be a helpful tool to both the instructor and learner.

Although the number of learning style instruments has proliferated over the past couple of decades, their use has come under intense scrutiny. Dembo and Howard (2006) question the validity and reliability of such instruments. Davis and Franklin (2003) question self-reporting assessments, because “students often don’t know when they learn, let alone how they best learn” (p. 1). As stated earlier, some instruments have poor reliability and validity (Lemire, 2000; Pitts, 2009). Other instruments are void psychometric ratings for either reliability or validity. Sometimes confusion exists among definitions and relevant characteristics (Lemire). Furthermore, learning style inventories may include a large number of items. In some instances, where there are numerous items (i.e., 100) on an inventory, it could take a long time to finish which may result in students rushing to complete it. In addition, some instruments require force-choiced options, which may not be truly reflective of the learners’ experience. Although the use of some assessments are questionable, an understanding learning styles can be beneficial to both the learner and instructor.

9.4.3 Learning Styles Inventories

As indicated earlier, there are a plethora of instruments and models used to explain and measure students' learning styles. Due to space limitations, I will focus on just a few. One popular classification for learning styles is visual, auditory, and kinesthetic (Knaak, 1983). Using a 45-item survey, Knaak included statements such as "The things I write down on paper sound better than when I talk about them" and "When I'm told the pages to refer to, I can remember them without writing them down." Visual learners simply learn best with pictures, graphs, and the written word. They prefer handouts as opposed to lectures. Auditory learners prefer audible sounds. They can detect changes in tone and inflection, which can serve as cues for remembering important information. Learners with a kinesthetic preference, learn best using physical activities or more tactile methods. Knaak further describes learners as group or individual. Group learners prefer to work with and learn from others as opposed to working independently. Individual learners believe they can accomplish more and learn best in isolation from others.

No discussion of learning styles inventories would be complete without a discussion on Kolb's contributions. Kolb (1976, 1985) established a self-reporting learning style inventory commonly referred to as LSI. Kolb and Kolb (2005) state that the LSI is different from most learning style instruments, because it is "based on a comprehensive theory of learning and development (p. 1). The LSI was developed to "serve as an educational tool to increase an individual's "understanding of the process of learning from experience" and his/her "unique individual approach to learning" as well as "provide a research tool for investigating experiential theory (ELT) and the characteristic of individual learning styles" (Kolb & Kolb, 2005). Kolb's (1985) experiential learning model encompasses four learning styles and two dimensions of experiences. Grasping experiences are diametrically opposed between concrete experience (i.e., feeling) and abstraction conceptual (i.e., thinking). The other dimension, related to transforming experiences, consists of active experimentation (i.e., doing) and reflective observation (i.e., reflecting). Kolb identifies learners as accommodators, assimilators, convergers, or divergers. Accommodators are intuitive in nature. They are good at adapting to changes and they learn from hands-on experiences, similar to a kinesthetic learner. On the other hand, assimilators, who are inductive thinkers, prefer to gather information from a variety of sources and place it in a logical form (Loo, 2004). Practicality is of the utmost importance to convergers. They also favor addressing technical issues. Each group of learners has a unique way of learning within Kolb's cycle of learning. However learning will vary based upon an individual's learning style and the content and context of learning.

Cognitive theory, experimental studies, and brain-lateralization theory are the foundation for the Dunn and Dunn learning style model (Dunn & Dunn, 1998; Honigsfeld & Dunn, 2006). Dunn (2000) believes there are 21 elements that can be grouped into five stimuli—environmental, emotional, social, physiological, and psychological—which can explain adults' learning. The environmental stimulus refers to physical aspects of the learning context including sounds, lighting, room temperature, and seating arrangements. The

emotional stimulus contains four elements—motivation, responsibility/conformity, task persistence, and structure. Adults are motivated to complete a task before they move on to the next one. Some adults need external or internal structure. The social stimulus describes a person's social learning preference. This could be individual; with a co-learner; with peers, a team, or group; an adult or authority figure; or a variety of the aforementioned. This could vary depending on the content. Features of the physiological stimulus include perceptual preferences such as those mentioned earlier from Knaak's (1983) model, auditory, visual, kinesthetic, or tactile (Rochford, 2003). The preferred time of day for learning, intake of food or a beverage, and mobility complete the physiological stimulus. The final stimulus, psychological, pertains to an individual's processing style—global versus analytic or impulsive versus reflective.

The Assessing the Learning Strategies of Adults or ATLAS learning styles inventory, developed by Conti and Kolody (1999) is a quick and easy instrument which validates "the learning preference group of adults" (para. 2). In all, they identified three groups of learners—navigators, problem solvers, and engagers. Using the mantra, "Plan the work; work the plan" (Conti & Kolody, 2004, p. 185), navigators are focused and outline a course of action for learning. They require structure and order, and are logic-oriented thinkers. Emotions are insignificant for this group of learners. They are results oriented, and thus, prefer to work individually, as they believe they can accomplish more as opposed to working in a group. Critical thinking skills are important to problem solvers, the second group of learners. They rely on the reflective thinking process and their critical thinking skills. Problem solvers will consider different alternatives, however, because "they are open minded to so many learning possibilities, they often have difficulty making decisions" (Conti & Kolody, 2004, p. 186). The last group of learners, engagers, love to learn and "learn best when they are actively engaged in a meaningful manner with the learning task" (Conti & Kolody, p. 186). Learning has to be fun for this group of learners. Learning excites them, however, they are likely to go with the familiar and not create new ways of accomplishing a learning task. There are many learning styles assessments in use. Educators should select the one that best suits their needs.

9.5 SUMMARY

Adults engage in learning activities for a variety of reasons. Within formal settings, adults' learning is assessed through formative, summative, or diagnostic means. Learning assessments can be a useful tool to help learners determine gaps in their knowledge or help instructors determine if they need to make changes to their teaching strategies. Another useful technique is a learning style inventory. Some of the most popular instruments use Kolb's experiential learning theory as their foundation. Many instructors use findings from these instruments to enhance students' learning or change their teaching methods to be inclusive of the diverse learning styles in the classroom. And, while these instruments and the information they provide can be useful, critics of learning inventories question

their validity and reliability. Some instructors match their instructional techniques to findings from inventories. This has its advantages and disadvantages. In addition, research suggests that this may not be the best policy. Nonetheless, as educators, we must assess adults' learning. Assessments should not be conducted haphazardly; and consideration has to be given as to their purpose. Instructors should use caution when using any inventories and conduct research into the reliability and validity of the instruments and the appropriateness for the intended group of learners.

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