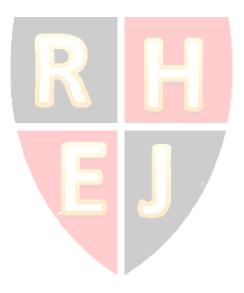# Adult learning styles and on-line educational preference

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ABSTRACT

The use of on-line instructional delivery methods by non-traditional adult learners continues to grow as technological and societal changes have enabled and encouraged this growth. The purpose of this paper is to review recent literature with respect to how adults learn and tie that concept into a discussion based upon a review of the suitability of, satisfaction with, and preference towards on-line instruction among adults. Some areas for improvement are discovered and recommendations are provided based upon these reviews.

Keywords: adult learners, on-line education, e-learning, student satisfaction, student preference

INTRODUCTION

From the ancient past to the present age, adults have strived to improve their own independent intellect. From the earliest understanding, it has been identified that once their basic safety needs are taken care of, humans look for something more in an attempt towards reaching a higher level of survival in the world. However, education may very well be about the fact that Man does not simply seek survival at another man's whim; Man wishes to survive on his own terms, retaining his independence and improving his capacity for independent action or, in effect, "learning" (Boyd, 1986). Without a critical- analysis of their viewpoints by others, thinkers in a position of primacy can hinder others ability to retain their independence of thought. Consider the political process as an example: If a largely uneducated adult voter-base simply believed whatever the politicians told them, (or in other words, failed to retain their independent ability to think) the result would be a downward spiral of democratic quality that could ultimately lead to some form of despotic dictatorship. In short; the world of ideas is a world of conflict. As one enters into this conflict of ideas, it is useful to have a larger base of knowledge from which to perceive these ideas. This is perhaps one of the reasons that learning has often been described as a life-long pursuit. This is also the reason that educators of adults must continue to develop the best possible products and programs to allow adult learners the best possible opportunities to learn. These must be provided in the best format possible for their individual learning styles and educational needs. In short; if adult learners are the customers, then the customer might just "always be right" with respect to their critiques of online learning experiences. Educational institutions charged with providing these experiences need to be prepared to adapt and evolve as the technology that supports this learning evolves.

One way that governmental agencies have attempted to embrace this concept of the critically thinking adult, is through advancing the concept of the "lifelong learner". Indeed, the European Union (EU), Britain (in particular), and China have adopted policies which embrace on-line learning technologies in national efforts to promote this concept. However, some recent research suggests that these efforts can lead to a hollow learning atmosphere which is not amenable to its stated goals. In one such study focusing on China, it is noted that their effort has three main elements: (1) governmental influence, (2) overenthusiasm combined with underestimation of the potential of this technology, and finally, (3) a renewed and continuing effort to improve the quality of the education received this way that has not fully been embraced by the on-line education community (Yang, 2008). The result of all this combines to create a shallow, low quality learning experience with little educational value-added when compared to the classroom experience (2008). Ultimately, in this case, the researcher finds that what is lacking among the implementers of lifelong on-line learning is simply, "Vision" (Yang, 2008, p. 594). Looking at similar programs and efforts by the emerging nations of the EU; a recent research effort out of Turkey found a similarly shallow set of goals, policies and standards (Demirbilek, 2009). The recommendations in this case included implementing improvements in Information and Communication Technology (ICT) hardware and software as well as increasing cooperation between institutions and countries (2009).

QUESTIONS TO CONSIDER

Do non-traditional adult learners have learning styles which are conducive to the use of on-line educational opportunities? Do their learning styles lead to a preference towards the more

self-paced delivery of on-line education? In many sources related to teaching adults, methods are mentioned whereby teachers act more in the role of the facilitator, allowing students to work out problems on their own. This method seems to support or recognize the value of constructivist theory. Under this constructivist concept the students would be building concepts, one upon another, as they work out math or writing projects. In addition, many of the materials referenced for the subject of differentiated instruction, are deeply rooted in cognitive theory. One reason to refer back to cognitive theory for these efforts is that many of the methods proposed are attempting to get people to access their memory functions and build upon memory pathways. This is especially poignant with adult learners who theoretically would have a greater pool of memory pathways from which to build but, as they age, may have trouble accessing these pathways without proper mental "exercise". Two tie this in with these questions this discussion must first review some recent literature and seek to determine: What are the prevalent learning styles of adults, are these consistent in constructivist and cognitive ways that on-line education is often conducted and finally, are adult students satisfied and continuing in their on-line educational activities after they first experience the current "state of the art"?

LITERATURE REVIEW

As mentioned above, by looking at the characteristics of how adults learn new material or concepts, the theory of andragogy along with the overall concept of "life-long learning" have become more prevalent in the past thirty to forty years. The andragogical theory of adult human learning basically recognizes that adults have, and seek to develop, independence in their method of learning. They need to know why something must be learned. They approach learning from a perspective of life experience and seek out knowledge to help them cope with the challenges of life. Their life experiences have taught them that there will be more challenges in their future and that they have a need for knowledge to deal with them. Their independence shapes a desire to have control over how the learning will occur (Knowles, Holton & Swanson, 2005). As a basis for approaching the instruction of adults in general, it is believed that this recognition is helpful. However, one might surmise that some cases of delayed development or cultural isolation from free-thought would revert, even an adult, back to the pedagogical model. In other words, one could not have applied this free, independent-view of adults to the peoples of pre-democratic societies. Slaves, serfs, and the subjects of brutal rulers that were the populace of the pre-democratic, pre-enlightened world, would likely respond to instruction more like children, more out of fear and conditioning than from a dearth of life experience. A corollary argument would be that it was Man's internal desire for independence that led to human's striving to overcome despotism in the first place, and that this desire for independence has always been there. For an understanding of the earliest inherent independent desire for knowledge and the resultant effects, one might only need refer to The Book of Genesis, chapter three.

Learning styles

There are two ways to consider the question related to the learning styles of adults: The theoretical background on how adults learn and theories on the teaching of adults. Until recently, there has been a distinct lack of information on the specific subject of adult-learning. Early researchers, having established theories on learning through the use of animals, began to apply their efforts towards theories which sought to understand the pedagogical or "child" learner.

However, in the 1960's and 1970's the field of andragogy began to emerge (Knowles, Holton & Swanson, 2005). This advanced the field of developmental psychology into studies of the characteristics associated with age and learning after reaching a certain level of intellectual maturity.

The andragogical process model

Of the various sources referenced, one of the most comprehensive discussions on the theoretical and historical background of this subject was found in Knowles, Holton and Swanson's text, The Adult Learner. In this text, an adult learning model is presented, not in the form of a content model, but as an eight-element process model (Knowles, Holton & Swanson, 2005). In other words, a pedagogical approach may necessarily require a focus on the content but with the adult learner taking independent responsibility for his own learning, the andragogical model requires a process-focused approach.

The first element of this process involves preparing adult learners to receive and be involved in their instruction. To do this, the teacher would collect and be ready to provide information to the student while trying to get the students involved in the content of the instruction. They would also help students develop realistic expectations about their learning process (Knowles, Holton & Swanson, 2005). Such examples work well, in practice, in something like an after-work classroom Masters course. The challenge may become how to involve those adult students who are working together in an on-line environment. With this concept in mind, a 2010 research effort out of the University of Florida offers that this might best include the use of Wiki's, videos, Group project assignments, discussion boards and other interactive formats in an effort to increase interaction among students and enhance their overall learning experience (Rakap, 2010). In addition it has also been suggested that the use of videogames can help foster a very interactive and immersive type of curriculum (Barab, Gresalfi & Ingram-Goble, 2010).

The second element is to prepare and plan for an appropriate climate. A climate for adult learning requires a relaxed, trusting environment with mutually respectful communication that is positive and supportive. It should be a collaborative environment where students feel open and willing to share their experiences and ideas (Knowles, Holton & Swanson, 2005). In the on-line environment, this requires the instructor to be involved, be monitoring the students on-line interaction and ultimately to be the enforcer of standards with respect to a proper on-line academic atmosphere. The teacher then must plan for the lessons but (perhaps unlike the pedagogical classroom) with an eye towards involving the students in this planning (Knowles et al., 2005). For example, in preparing to instruct an instrument proficiency flight simulator, the flight instructor for an adult learner might ask him to look at past instrument grade-sheets and think about areas of weakness in his instrument flying proficiency.

Elements four through six involve a diagnosis of needs, setting of objectives and the actual designing of learning plans (Knowles, Holton & Swanson, 2005). Following the example from above, the instructor might have the student evaluate why he is weak in certain areas of proficiency. Having analyzed this, the student could then set quantifiable objectives with a goal towards eliminating these weak areas. With solid objectives in mind, the student could then plan a profile in the simulator which would develop these weaknesses into strengths.

The seventh element involves establishing learning activities. These activities should not be simple transmittal of information but should be experientially based (Knowles, Holton &

Swanson, 2005). Adult students, by working together to solve problems and injecting the variety of their past experiences into the process, can learn symbiotically. In this way, two adults experiences added to two others in a practical exercise can result in learning at a factor greater than just four. In short: "the sum of our whole is greater than its parts" in the adult classroom.

Knowles' final process element is evaluation. Unlike the top-down pedagogical approach of evaluation whereby a teacher gives a student his report card, andragogical learners need to be involved in the diagnosis of their performance and re-diagnosis of their needs (Knowles, Holton & Swanson, 2005). Indeed, one might argue that adult students are going to do this anyway, even if they are evaluated pedagogically. If a teacher fails to tap into this existing process, they are missing out on an opportunity to have more awareness about the effectiveness of their program. This "mutual measurement of the program" (Knowles et al. p. 116), is much more enabling of process improvement, both for current adult learners and future classes.

Determining the learning styles of adults

So, how have researchers begun to evaluate these differences associated with Adult learners? One instrument that is used widely in studies related to this topic is the Kolb Learning Styles Inventory (LSI). This instrument began in 1984 and has continued to evolve over time. It is shaped by the experiential learning theories of its developer Dr. Kolb (Knowles, Holton & Swanson, 2005). In survey form, this instrument proposes two dimensions of learning style, perceptual and processing (Knowles et al., 2005). Factors considered are: concrete experience versus abstract generalization, and active experimentation versus reflective observation (Knowles et al., 2005). The results of the instrument are presented in the form of four styles: divergers, assimilators, convergers, and accommodators (Knowles et al., 2005). This instrument has good validity and is widely used as an applied learning model to design educational research.

One such example of an LSI oriented study is a recent effort to evaluate the learning styles among learners of different ages and different stages of a prolonged course of study. A quantitative research effort by an Australian educational researcher, this study found that there was a significant relationship between learning styles and year of study (Tucker, 2009). In particular, as students progressed towards completion of their course of study there was a drift towards an abstract conceptualization mode in their individual learning process or styles (2009). Additional results suggested that "Southern Learners" (in terms of southern hemisphere latitudes) learning styles were more consistent with the first year of study and "Northern Learners" (a smaller number of whom made it to the third year), did better in the later course of study (2009). If one were to apply these lessons to the concept of an online educational program delivered to a wide variety of adults, there may be impetus here to leave some andragogical versus pedagogical flexibility into the course delivery process. This will enable an instructor to customize or vary his delivery approach as his students move from lesson to lesson or from course to course over a period of time.

Another Kolb LSI-based study dating back to 2002 found that older adult learners surveyed were generally categorized as "assimilators" (reflective observers) and that they were mostly resistant to the type of instruction delivered via technology-dependent modes (Buch & Bartey, 2002). However, a growing population of "convergers" (abstract conceptualizers) was most receptive to this type of training (2002). A counter-argument to the results of this study is based largely on the date: at nearly half a generation old, the population of "convergers" among adult learners has most likely grown in the U.S. workforce. It should also be noted that this study

was from a U.S. financial institution and while American society has continued to evolve and grow increasingly technological in its orientation, many European and Asian countries might be seeing similar results with their "assimilators" as can be seen in the next few reviews.

Adults and on-line education

More research has begun to emerge on the topics of on-line education, especially with respect to adult learners in the pacific-rim and Europe. In a 2010 contribution to the International Conference on E-learning, Malaysian researchers Hashim, Ammahd and Abdullah questioned and interviewed 500 adult students in their country who were involved in on-line learning programs. What they discovered was that more and more of these adults wanted to enroll in these courses, mostly in an effort to improve their employment or qualification standing (2010). In general though, these students were all relatively dissatisfied with the on-line learning experience. However, as might be suspected, the researchers learned that the level of satisfaction was somewhat related to the students confidence and abilities in using computer technology. Many of the respondents were proficient, indeed used computers extensively in their jobs, and still were dissatisfied with the experience. Interestingly the researchers ended up recommending that many of these types of students should be encouraged to enroll and participate in on-line courses even if they are dissatisfied with the experience (2010). This stems from an observation (suggested by the research) that as students "force" themselves to grow in this area, their individual anxieties about the use of technology tend to wane and these students were later found to be among the most successful and satisfied (2010). This closely matches the findings of other pacific-rim researchers. In a Taiwan based study of adult students using a Constructivist Internet-based Learning Environment (CILE), it was found that Internet Self-Efficacy (ISE) only played a "mediating" role in whether a student preferred their on-line education experience. The more important factor was their readiness and self-motivation *towards* CILE and that the skills would eventually follow from this motivation. However, the researchers did also acknowledge that time spent developing their ISE would encourage greater future preference for CILE (Chu & Tsai, 2009).

Changing the perspective from that of the students' readiness to the instructors approach; a recent study looked into the teaching and learning philosophies among those who teach distance education courses at major universities in Beijing and Shanghai, China. In this quantitative research effort Dr. Victor Wang and Peter Kreysa out of Cal State University, Long Beach, an analysis of the data indicates that in many areas Chinese adult educators continue to focus on the teacher-centered or content-centered forms of instruction when teaching these on-line courses (Wang & Kreysa, 2006). These distance-educators were found to be promoting lower-order thinking skills including much use of wrote-memorization (2006). Less focus was placed on the development of critical-thinking skills or other forms of critical reflection on the material (2006). This led to a shallow and less impactful learning experience for their adult students. The results of this study suggest that in the future, educators should analyze their teaching philosophies and the degree to which they apply more liberal, andragogical methods in the classroom. In doing so, the learning self-efficacy and continued preference or satisfaction with the learning experience may be better assured.

Government, societal changes, and on-line education

Like its title suggests, the article Florida's Online Option is an overview of an actual public (Florida state) supported on-line school that despite much controversy and many funding problems in Florida recently, has proven to be very successful (Tucker, 2009). This success has taken the form of good public image, both with voters and the legislature, and good Advanced Placement test scores among the students (2009). The author contends that the main reason for this success has been along three lines: changes in society, a close working relationship (initially) with the legislature, and quality teacher support in their virtual classroom (2009). Their success in communicating with the voters and the legislature is a text book example of how to get support for a good program at the state level. If applied to an adult on-line learning scenario, such as vocational opportunities through community colleges, one might find that while we might experience greater acceptance for on-line opportunities as society continues to evolve, we might also accelerate this acceptance by working with the public and the supporting governmental agencies.

Lessons from the field of organizational behavior

Organizational behavior studies offer insight into some of the issues associated with adult learner preference and satisfaction with their learning experience. In short, these organizational behavior "lessons learned" can be associated with not only job satisfaction but learner-satisfaction as well. This association was the focus of a recent research effort out of Arkansas State University (Sinclare, 2011). A close look comparing historically valid information on job satisfaction in the traditional work environment compared with that of the learning environment revealed that these two are very similar with many known job-satisfaction factors also being shared as student-satisfaction items (2011). For example; while relationships and feedback are important for employees, interaction and communication are important for students. In addition, while information technology self-efficacy is important in the remote-work environment, computer self-efficacy is important in the online educational environment. Additional elements that were identified as determinants of student satisfaction with their on-line learning experience included course design, the learning environment itself and the ability to control one's individual learning pace (2011). Finally it was recognized that while much of the control over one's satisfaction in their working-life rests in the hands of management; in the online learning environment, this control is very much in the hands of instructors and administrators (2011). From this one may derive a couple of additional conclusions: If those who offer on-line instructional programs make every effort to either recruit individuals who already possess computer self-efficacy or offer prep courses to shore up the computer self-efficacy of future students they can improve their students satisfaction with the on-line learning experience. However, some caution may be due if educators choose to ensure computer self-efficacy and therefore, satisfaction and preference for their on-line courses by pre-screening their applicants with a student self-assessment questionnaire. A recent study in this area suggested that much is lacking in the current choices and selection of material for these questionnaires. In the study it was found that orienting students towards on-line courses in this way actually led to some negative consequences (Cross, 2009). For example, the researcher learned that many students who score well on a computer-skills self-efficacy questionnaire actually fail to complete courses (2009). In contrast, many students who scored poorly on the assessment enjoyed the fact that

their computer skills improved as a result of their courses of study on-line and completed further studies, developing greater skills along the way (2009). Finally, it should be recognized that in general, course design that offers ease of access for all, along with a marketing strategy which seeks out students who need flexibility and control in their schedules will likely also help with the satisfaction levels of these future students.

CONCLUSIONS

From these various recent findings one might surmise that the instructional approach towards students should evolve or change along with the changes in their individual learning styles which naturally occur within their cultural context, their age and over the course of a several-years-long course of study. In particular, there are also implications in an international environment that educators must consider the country of origin in a similar, cultural way. The results of some eastern studies suggest that educators should analyze their teaching philosophies and the degree to which they apply some of the more liberal, andragogical methods in the on-line classroom and that this should be balanced with an understanding of the student's computer self-efficacy. Indeed, most prevalent in much of the literature reviewed was the need to enhance or account for individual learner's computer skills and self-efficacy. The proposed methods to do this center mostly along two basic ideas: The first recommendation is to make every effort towards improving or adapting the presentation of on-line learning through implementation of the latest hardware and software improvements. The second recommendation from current literature is that institutions need to train or adapt the material to allow for better internet learning skills among the student population. Some consideration should also be given to marketing towards, or screening out, applicants for certain on-line delivery methods based upon an analysis of their computer and internet self-efficacy. However, this was generally considered to be less important or effective than the delivery-focused approach.

In the end there may be some answers to the original questions in this article: Yes; many non-traditional adult learners seem to have learning styles which are conducive to the use of on-line educational opportunities. And yes; their learning styles may lead to a preference towards the more self-paced, delivery of on-line education. However, schools and governmental agencies implementing these programs need to account for the different technology skill-sets of these learners and should strive to make every effort to keep their delivery products up to date and relevant.

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