Age and Learning Style in the Adult Learner

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ABSTRACT

Do individuals experience a change in the preferred method of learning as they age? The answer to this question can greatly help educators and students alike in the efficiency of the educational process. An introduction to this topic is provided followed by a research question and methodology for the research. Finally, results are brought forth and conclusions recommended.

INTRODUCTION

Do students who are of different ages prefer similar learning styles with regard to online education? This is an interesting question and one that deserves an in depth analysis.

Online education is defined as the process of providing instruction when students and instructors are separated by physical distance and technology, often in tandem with face-to-face communication, is used to bridge the gap. Learning styles can be defined as the way each person concentrates on, processes, internalizes, and retains new and difficult academic information.

The instrument that was used consisted of a 44 question survey developed by Barbra Solomon at North Carolina State University. Question numbers 1, 5,9,13,17,21,25,29,33,37 and 41 determine if the learner is active or reflective. Question numbers 2, 6, 10, 14,18,22,26,30,34,38 and 42 determine if the learner is a sensing or intuitive learner. Question numbers 3,7,11,15,19,23,27,31,35,39 and 43 measurers if the learner is visual or verbal and questions 4,8,12,16,20,24,28,32,36,40 and 44 measure if the learner is a sequential or global learner

LEARNING STYLE ANALYSIS

In addition to this learning style preference theory developed by Felder and Solomon, many other theories exist regarding learning styles. It is widely agreed that students learn differently. To effectively educate individuals, various researchers have developed learning theories, because educators want to maximize the learning process for the students. It would be counterproductive to simply offer education that was suited for one type of learner. In addition, bright students could develop negative attitudes towards education if the instruction emphasizes a style different from their own. It is extremely important that educators embrace different learning styles. Instructors need to have an understanding of how students learn, so as to provide students with the highest quality educational environment. Several widely accepted learning styles are listed in David Kolb’s Learning Style Inventory.

Kolb’s Four Learning Styles

(1) Convergers: The converger acquires knowledge by thinking/analyzing and then practically applying the new ideas and/or concepts. The ability to practically apply ideas is this learner’s greatest strength. Convergers organize information through hypothetical deductive reasoning. The emphasis for convergers is to think rationally and concretely while remaining relatively unmotional;
(2) Divergers: The diverger acquires knowledge through intuition. Individuals with this preferred style of learning draw upon their imaginative aptitudes and their abilities to view complex situations from many perspectives. Divergers also possess the ability to effectively integrate information into meaningful wholes. However, the diverger’s imaginative ability is his/her greatest strength;

(3) Assimilators: The ability to create theoretical models and reason inductively is the assimilator’s greatest strength. Assimilators learn by thinking and analyzing and then planning and reflecting. Assimilators do not emphasize practical application; rather they focus on the development of theories, often discard facts if they do not fit the theory;

(4) Accommodators: Unlike the assimilators, accommodators will discard the theory if the facts do not fit. Accommodators excel in situations where they must apply theories to specific circumstances. Their greatest strength is their abilities to complete projects and become fully involved in new experiences. Accommodators approach problems in an intuitive, trial-and-error manner and they obtain information from other people rather than their own analytic abilities. Kolb’s learning styles is shown in Figure 1.

Figure 1. Kolb’s learning styles.

The ideas behind assimilation and accommodation originate in Jean Piaget’s definition of intelligence as the balance between the process of adapting concepts to fit the external world (accommodation) and the process of fitting observations into the world of existing concepts (assimilation). Convergence and divergence are the two essential creative processes.

Kolb’s learning cycles, known as the KLSI (Kolb Learning Style Inventory), also measure learning cycle preference. Kolb defined four learning cycles: (1) Concrete experience: The learner perceives information from specific experience. For example, they perceive information by feeling, touching, seeing and hearing. They also learn by relating to people and sensitive to feelings. This learner can learn easily by experimenting in the laboratories and in the field of work. Finally, they learn better with audio-visual media like films and multimedia applications; (2) Reflective observation: The learner processes information by thinking about it. They observe carefully before making a judgment. They view things from different perspectives and look for the meanings of things. Finally, they like to develop observations about their own experiences. A reflective observer can use logs and read journals in order to learn easier
and better; (3) Abstract conceptualization: This learner perceives information abstractly using mental or visual conceptualization. They also analyze ideas logically, plan systematically, and act on the intellectual understanding of a situation. Finally, they create theories to explain observations. This student learns through lecturing, reading and researching; (4) Active experimentation: This learner perceives information by doing something with it. They have the ability to get things done, take risks and influence people and events through action. In addition, they have theories to solve problems and make decisions. They learn better with simulations, case studies and homework.

The four cycles are tied into learning styles. For instance, a converger favors a learning cycle of abstract conceptualization and active experimentation, which fits since these two learning cycles are characterized by learning by doing and thinking. Since convergers focus on reasoning and solving problems, the cycles and learning styles are closely tied together.

The next few paragraphs will examine the learning styles used in this study which deal with active VS reflective, visual VS verbal, Sequential VS Global and sensing VS Intuition.

Active and Reflective Learners

A student’s preference for active or reflective learning may be strong, moderate or mild. A balance of the two learning is desirable. If the student acts before reflecting, they could immerse themselves into the content prematurely and not learn the material. On the other hand, if the student spends too much time reflecting, they might never get anything done.

If the student is an active learner in a class that allows little or no class time for discussion or problem-solving activities, they should try to incorporate those techniques while studying. For example, an active learner would benefit from group study where the members take turns to explain different topics. Students who are active learners can have difficulty in situations where the class does not involve discussion or problem-solving activities. Active learners typically work very well in groups. Reflective students usually do well to summarize content in the class by writing immediately after class. Characteristics of active and reflective learners are listed as:

(1) Active learners tend to retain and understand information best through participating in discussions, applying what they have learned or explaining it to others. Reflective learners prefer to think about it quietly first;

(2) Active learners prefer group work. Reflective learners prefer working alone;

(3) Sitting through lectures without doing anything physical but take notes is hard for both learning types, but particularly hard for active learners (Soloman & Barbara, 2003).

Sensing and Intuitive Learners

A student’s preference for sensing or intuitive learning may be strong, moderate or mild. To be effective as a learner and problem solver, students need to be able to function both ways. If the student overemphasizes intuition, they may miss important details or make careless mistakes in calculations or hands-on work. If the student overemphasizes sensing, they may rely too much on memorization and familiar methods and not concentrate enough on understanding and innovative thinking.

Sensors usually retain information best by identifying how it connects to the real world. A sensing student could have difficulty if most of the material is abstract and theoretically based. Many college lecture classes are aimed at intuitors. Characteristics of sensing and intuitive learners are listed as:

(1) Sensing learners tend to like learning facts. Intuitive learners often prefer discovering possibilities and relationships;

(2) Sensors often like solving problems by well-established methods and dislike complications and
surprises. Intuitors usually welcome innovation and dislike repetition. Sensors are more likely than intuitors to resent being tested on materials that have not been explicitly covered in class;

(3) Sensors tend to be patient with details and good at memorizing facts and doing hands-on (laboratory) work. Intuitors may be better at grasping new concepts and often more comfortable than sensors with abstractions and mathematical formulations;

(4) Sensors tend to be more practical and careful than intuitors. Intuitors tend to work faster and be more innovative than sensors;

(5) Sensors don’t like courses that have no apparent connections to the real world. Intuitors do not like “plug-and-chug” courses that involve a lot of memorizations and routine calculations (Soloman & Barbara, 2003).

Visual and Verbal Learners

Visual learners remember best what they see, such as pictures, diagrams, flow charts, time lines, films and demonstrations. Verbal learners get more out of words—written and spoken explanations.

In most college classes, very little visual information is presented: Students mainly listen to lectures and read materials written on chalkboards and in textbooks and handouts. Unfortunately, most people are visual learners which mean that most students do not receive the benefits of working with their preferred learning styles. Good learners are capable of processing information presented either visually or verbally (Solomon & Barbara, 2003).

Sequential and Global Learners

Sequential learners tend to gain understanding in linear steps, with each step following logically from the previous one. Global learners tend to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly “getting it”.

Sequential learners tend to follow logical paths in finding solutions. Global learners may be able to solve complex problems quickly or put things together in novel ways once they have grasped the big picture, but they may have difficulty in explaining how they did it (Solomon & Barbara, 2003).

Many people who read this description may conclude incorrectly that they are global, since everyone has experienced bewilderment followed by a sudden flash of understanding. Sequential learners may not fully understand the materials but they can utilize them in solving homework problems or passing tests. Global learners, who lack good sequential thinking abilities, may have serious difficulties until they have the big picture. Even after they have it, they may be fuzzy about the details of the subject, while sequential learners may know a lot about specific aspects of a subject but may have trouble in relating them to different aspects of the same subject or different subjects.

Many educators fail to adapt their instructional methods to coincide with students learning styles, especially the online learning environment. Since online learning is a relatively new development, many instructors do not know who the typical online students are, and more importantly, how they learn. It is a major problem with online education. This study was designed to provide more insights into student learning styles as they relate to online learning.
DESCRIPTION OF THE STUDY

The survey was completed by a total of 142 students. Students completed the survey in the Department of Instructional Systems, Leadership and Workforce Development at Mississippi State University. The participants yielded the following statistics:

Gender Statistics:
- 58.9% female, 41.1% male

Education Level Statistics:
- 43% High School Diploma
- 19% Associate Degree
- 31% Bachelor Degree
- 6% Master Degree

Ethnicity Statistics:
- Caucasian 49.6%
- African American 45.4%
- Asian 1.4%
- Hispanic 7.4%
- Other 2.8%

Age Statistics:
- 46.8% Traditional college age (18-24)
- 18.4% over the age of 30
- Mean age 25.5

Employment Statistics:
- 41.1% Unemployed
- 39% Part time employed
- 19.9% Full time employed

This article will explore the question of:
Do students who are traditional college age (18-24 years) have different preferred learning styles from students who are ages 25-56 years? The respondent who was 56 years old represented the oldest respondent.

Survey Descriptors:

<table>
<thead>
<tr>
<th>Learning Style Quadrant</th>
<th>1.00 – 1.24 = Strong Preference</th>
<th>1.25 – 1.49 = Mild Preference</th>
<th>1.50 = NO Preference</th>
<th>1.50 – 1.75 = Mild Preference</th>
<th>1.76 – 2.00 = Strong Preference</th>
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<tr>
<td>Active / reflective</td>
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<td>No Preference</td>
<td>Mild Reflective</td>
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<td>Sequential / Global</td>
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<td>Mild Sequential</td>
<td>No Preference</td>
<td>Mild Global</td>
<td>Strong Global</td>
</tr>
</tbody>
</table>

Table 1
**FINDINGS**

Statistical significance was found in the visual/verbal quadrant. The significance level was at $p=>.050$. The $p$ value was at $.034$. The mean scores were 1.26 for traditional college age students while the nontraditional students scored at 1.34. This means that participants in this study who were of a traditional college age had a stronger preference for visualization than did the nontraditional age college students.

<table>
<thead>
<tr>
<th>Quadrant Title</th>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>Std dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active / Reflective</td>
<td>18-24</td>
<td>98</td>
<td>1.43</td>
<td>.198</td>
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<tr>
<td></td>
<td>25-56</td>
<td>42</td>
<td>1.41</td>
<td>.192</td>
</tr>
<tr>
<td>Sensing / Intuitive</td>
<td>18-24</td>
<td>98</td>
<td>1.40</td>
<td>.222</td>
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<td></td>
<td>25-56</td>
<td>42</td>
<td>1.33</td>
<td>.264</td>
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<tr>
<td>Visual / Verbal</td>
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<td>98</td>
<td>1.26</td>
<td>.189</td>
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<tr>
<td></td>
<td>25-56</td>
<td>42</td>
<td>1.34</td>
<td>.226</td>
</tr>
<tr>
<td>Sequential / Global</td>
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<td>98</td>
<td>1.39</td>
<td>.179</td>
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<tr>
<td></td>
<td>25-56</td>
<td>42</td>
<td>1.42</td>
<td>.216</td>
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<tr>
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<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
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<td>Active / Reflective</td>
<td>.579</td>
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<td>.564</td>
<td>.0210</td>
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<td>Sequential / Global</td>
<td>-.762</td>
<td>138</td>
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</table>

**CONCLUSIONS AND RECOMMENDATIONS**

Based on available research, one might be lead to conclude that using the index of learning style instrument in a study such as this would result in online students indicating a preference for strong reflective, visual, intuitive and global learning. Similarly, offline preferences would fall in strong active, verbal, sensing and sequential areas. Although participants did show significant differences, in many cases the difference was in the same quadrant. The differences were not as pronounced as one might believe through the examination of prior research.

**REFERENCES**
