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Does Employment Status Impact Learning Style?

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Do individuals experience a change in the preferred method of learning as a result of employment? The answer to this question can greatly help educators and students be 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.

Keywords: employment, learning style, education, higher education

Introduction

Do students with different employment levels learn differently? It is an interesting question and one that deserves 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 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.

Definition of Terms

For the purposes of this study terms, those terms that are technical in nature, unique to the study and subject to more than one interpretation are defined as follows (Solomon, 2003; Contra Costa College Glossary, 2003):

(1) Asynchronous: Communication in which interaction among parties does not take place simultaneously;

(2) Online education: The process of providing instruction when students and instructors are separated by physical distance and technology, often in tandem with face-to-face communication bridge the gap;

(3) Online learning: The desired outcome of online education;

(4) Electronic mail (E-mail): Sending messages from one computer user to another;

(5) Synchronous: Communication in which interaction among participants is simultaneous;

(6) Learning styles: The way each person concentrates on, processes, internalizes and retains new and difficult academic information;

(7) Active learners: People who process information more efficiently through active participation in the learning process;

(8) Reflective learners: Students who process information more effectively through reflection upon the content after the content has been delivered;

(9) Sensing learners: People who learn best through the use of the five senses;

(10) Intuitive learners: People who rely on their intuitions to learn;

(11) Visual learners: Students who retain the most amount of information through a visual means of

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processing that information;

(12) Verbal learners: Students who retain information by hearing the information;

(13) Sequential learners: Learners who prefer to process small pieces of information;

(14) Global learners: Students who prefer to learn by looking at the whole picture at one time.

In addition to this learning style preference theory developed by Felder and Solomon (n. d.), 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 counter productive to simply offer education that was suited for one type of learners. 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

Kolb's Four Learning Styles are as follows:

(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 unemotional;

(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 are shown in Figure 1.

The ideas behind assimilation and accommodation originate from 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's 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.

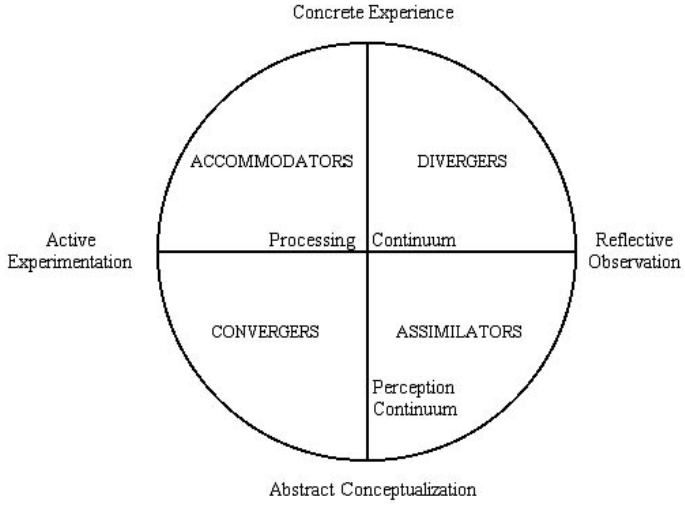

Figure 1. Kolb's learning styles.

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.

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 materials. 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 taking 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 do not 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 students' learning styles as they relate to online learning.

The eight learning styles examined in this study, along with a brief description of each style, are shown in Table 1.

Table 1

Descriptions of Learning Styles

Learning style	Description
Active	Prefer to learn new materials by actively engaging in the learning process
Reflective	Prefer to learn new materials through reflection after information has been taught
Sensing	Prefer to rely on the five senses to learn new materials
Intuition	Prefer to use intuition to learn new materials
Visual	Prefer to learn by visualizing information
Verbal	Prefer to learn through hearing information or speaking the information
Sequential	Prefer to learn in small steps
Global	Prefer to see the overall picture to learn new materials

The instrument that was used consisted of a 44-question survey developed by Barbra Solomon at North Carolina State University (see Appendix). 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 measure 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.

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:

(1) Gender statistics: 58.9% are female, 41.1% are male;

(2) Education level statistics: 43% are high school diploma; 19% are associate degree; 31% are bachelor

degree; 6% are master degree;

(3) Ethnicity statistics: Caucasian are 49.6%; African American are 45.4%; Asian are 1.4%; Hispanic are 7.4%; Other are 2.8%;

(4) Age statistics: 46.8% are traditional college age (18 to 24); 18.4% are over the age of 30; Mean age are 25.5;

(5) Employment statistics: 41.1% are unemployed; 39% are part-time employed; 19.9% are full-time employed.

This article will explore the question of: Do students who are unemployed have different learning preferences from those who are employed full time?

Survey descriptors are shown in Table 2.

Table 2

Survey Descriptors

Learning Style Quadrant	1.00 – 1.24 = Strong Preference	1.25 – 1.49 = Mild Preference	1.50 = No Preference	1.51 - 1.75 = Mild Preference	1.76 - 2.00 = Strong Preference
Active/reflective	Strong Active	Mild Active	No Preference	Mild Reflective	Strong Reflective
Sensing/Intuition	Strong Sensing	Mild Sensing	No Preference	Mild Intuition	Strong Intuition
Visual/verbal	Strong Visual	Mild Visual	No Preference	Mild Verbal	Strong Verbal
Sequential/Global	Strong Sequential	Mild Sequential	No Preference	Mild Global	Strong Global

Findings

According to Tables 1 and 2, the researcher compared unemployed persons, $N = 58$, who participated in the study with full-time employed persons, $N = 28$. Since only two groups were used, an independent *T*-test was used to analyze the data. In the sensing/intuitive quadrant, significance was found $t = 2.2$, $p \leq 0.05$ (see Tables 3 and 4). Individuals who were employed full time had a mean score of 1.40 indicating that they had a mild preference for sensing information. Part-time employed individuals had a mean score of 1.29, indicating that they also have a mild preference for sensing verses intuition in learning. The mean score for the active/reflective quadrant for both unemployed and full-time participants was 1.42, indicating a mild preference for active learning. In the visual/verbal quadrant, the mean score was 1.29 for unemployed participants and 1.34

full-time participants, indicating a mild preference for visual. The sequential/global quadrant means were 1.40 for unemployed participants and 1.38 for full-time employed participants indicating both groups of participants had a mild preference for sequential.

Table 3

ANOVA for Research Question

Quadrant title	*N*	Mean	Standard deviation
Active/reflective	55 (full), 28 (part)	1.44 (full), 1.42 (part)	0.215 (full), 0.190 (part)
Sensing/intuition	55 (full), 28 (part)	1.40 (full), 1.29 (part)	0.253 (full), 0.223 (part)
Visual/verbal	55 (full), 28 (part)	1.25 (full), 1.34 (part)	0.179 (full), 0.233 (part)
Sequential/global	55 (full), 28 (part)	1.40 (full), 1.38 (part)	0.185 (full), 0.209 (part)

Table 4

Independent Samples T-test for Research Question

Quadrant title	*T* (*t*-score)	*Df* (degrees of freedom)	*Sig.* (2 tailed) (significance level under 0.05 indicates statistical significance)	Mean difference
Active/reflective	0.468	81	0.641	0.0226
Sensing/intuition	1.844	81	0.069	0.1045
Visual/verbal	-2.047	81	0.044	-0.0945
Sequential/global	0.341	81	0.734	0.0153

Conclusions and Recommendations

Based on available research, one might be lead to conclude that using the index of learning style instrument in a study 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 differences were in the same quadrant. The differences were not as pronounced as one might believe through the examination of prior research.

References

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Appendix: The Instrument That Was Used in the Research

I understand something better after I

(a) try it out.

(b) think it through.

I would rather be considered

(a) realistic.

(b) innovative.

When I think about what I did yesterday, I am most likely to get

(a) a picture.

(b) words.

I tend to

(a) understand details of a subject but may be fuzzy about its overall structure.

(b) understand the overall structure but may be fuzzy about details.

When I am learning something new, it helps me to

(a) talk about it.

(b) think about it.

If I were a teacher, I would rather teach a course

(a) that deals with facts and real life situations.

(b) that deals with ideas and theories.

I prefer to get new information in

(a) pictures, diagrams, graphs, or maps.

(b) written directions or verbal information.

Once I understand

(a) all the parts, I understand the whole thing.

(b) the whole thing, I see how the parts fit.

In a study group working on difficult material, I am more likely to

(a) jump in and contribute ideas.

(b) sit back and listen.

I find it easier

(a) to learn facts.

(b) to learn concepts.

In a book with lots of pictures and charts, I am likely to

(a) look over the pictures and charts carefully.

(b) focus on the written text.

When I solve math problems

(a) I usually work my way to the solutions one step at a time.

(b) I often just see the solutions but then have to struggle to figure out the steps to get to them.

In classes I have taken

(a) I have usually gotten to know many of the students.

(b) I have rarely gotten to know many of the students.

In reading nonfiction, I prefer

(a) something that teaches me new facts or tells me how to do something.

(b) something that gives me new ideas to think about.

I like teachers

(a) who put a lot of diagrams on the board.

(b) who spend a lot of time explaining.

When I'm analyzing a story or a novel

(a) I think of the incidents and try to put them together to figure out the themes.

(b) I just know what the themes are when I finish reading and then I have to go back and find the incidents that demonstrate them.

When I start a homework problem, I am more likely to

(a) start working on the solution immediately.

(b) try to fully understand the problem first.

I prefer the idea of

(a) certainty.

(b) theory.

I remember best

(a) what I see.

(b) what I hear.

It is more important to me that an instructor

(a) lay out the material in clear sequential steps.

(b) give me an overall picture and relate the material to other subjects.

I prefer to study

(a) in a study group.

(b) alone.

I am more likely to be considered

(a) careful about the details of my work.

(b) creative about how to do my work.

When I get directions to a new place, I prefer

(a) a map.

(b) written instructions.

I learn

(a) at a fairly regular pace. If I study hard, I'll "get it".

(b) in fits and starts. I'll be totally confused and then suddenly it all "clicks".

I would rather first

(a) try things out.

(b) think about how I'm going to do it.

When I am reading for enjoyment, I like writers to

(a) clearly say what they mean.

(b) say things in creative, interesting ways.

When I see a diagram or sketch in class, I am most likely to remember

(a) the picture.

(b) what the instructor said about it.

When considering a body of information, I am more likely to

(a) focus on details and miss the big picture.

(b) try to understand the big picture before getting into the details.

I more easily remember

(a) something I have done.

(b) something I have thought a lot about.

When I have to perform a task, I prefer to

(a) master one way of doing it.

(b) come up with new ways of doing it.

When someone is showing me data, I prefer

(a) charts or graphs.

(b) text summarizing the results.

When writing a paper, I am more likely to

(a) work on (think about or write) the beginning of the paper and progress forward.

(b) work on (think about or write) different parts of the paper and then order them.

When I have to work on a group project, I first want to

(a) have “group brainstorming” where everyone contributes ideas.

(b) brainstorm individually and then come together as a group to compare ideas.

I consider it higher praise to call someone

(a) sensible.

(b) imaginative.

When I meet people at a party, I am more likely to remember

(a) what they looked like.

(b) what they said about themselves.

When I am learning a new subject, I prefer to

(a) stay focused on that subject, learning as much about it as I can.

(b) try to make connections between that subject and related subjects.

I am more likely to be considered

(a) outgoing.

(b) reserved.

I prefer courses that emphasize

(a) concrete material (facts, data).

(b) abstract material (concepts, theories).

For entertainment, I would rather

(a) watch television.

(b) read a book.

Some teachers start their lectures with an outline of what they will cover. Such outlines are

(a) somewhat helpful to me.

(b) very helpful to me.

The idea of doing homework in groups, with one grade for the entire group,

(a) appeals to me.

(b) does not appeal to me.

When I am doing long calculations,

(a) I tend to repeat all my steps and check my work carefully.

 (b) I find checking my work tiresome and have to force myself to do it.

I tend to picture places I have been

 (a) easily and fairly accurately.

 (b) with difficulty and without much detail.

When solving problems in a group, I would be more likely to

 (a) think of the steps in the solution process.

 (b) think of possible consequences or applications of the solution in a wide range of areas.