

THE EFFECT AN INDIVIDUALS' LEARNING STYLE HAS ON GRADES IN TRADITIONAL AND DISTANCE LEARNING

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ABSTRACT

The purpose of this study was to examine, based on an individual's preferred style of learning as determined by the Kolb Learning Style Inventory, (Oslund, Kolb, & Rubin, 2001) whether there would be a significant difference in grade point averages (GPA's), between classes taken in the traditional delivery methodology, as opposed to the distance learning environment. Numerous studies have shown that individuals process information differently. In today's educational environment the traditional educational delivery method of a professor standing in front of a classroom of students has been augmented, and in some cases supplanted, by various on-line, distance learning delivery methodologies. Studies have also shown that not all individuals learn at the same level when participating in courses which utilize different approaches. This study attempted to ascertain if there is a significant difference in a student's GPA between classes taken in the traditional delivery methodology, as compared to ones in the distance learning environment, in relation to their preferred learning style. The study found that only in the case of the "Assimilator" learning style did a significant difference exist between the grade point average of courses taken between courses taken through distance learning, compared to those delivered in the traditional mode.

INTRODUCTION

This study examined traditional delivery methodology, as opposed to the distance learning environment as related to an individual's preferred style of learning (Oslund, Kolb, & Rubin, 2001) to determine whether there would be a significant difference in grade point averages (GPA's). While individuals process information differently, today's educational arena has been challenged by the demand for virtual web-based education. This study attempted to ascertain if there is a significant difference in a student's GPA between classes taken in the traditional delivery methodology, as compared to those taken in the distance learning environment, in relation to their preferred learning style.

Educational delivery methodologies are experiencing a constant state of flux due to the technological advances available in today's environment. Fifty

years ago, when one thought about distance learning courses, it was probably related to something they had read on the back of a match book cover. As times have changed, so have the methodologies available to deliver education. Gone are the days when an individual had to travel to a physical campus to attend a college or university in pursuit of a degree, replaced by the computer and the internet. Bear (1994) states that in today's workplace a college degree is usually considered more important than substantial knowledge or experience in almost any field. He contends that as the need for degrees increases, availability has kept pace with what is now called alternative, nontraditional, external or off-campus education. Individuals today are taking longer to complete college degrees, and often return to complete their degree while working full or part-time (Dixon, 1996). "The older, part-time student is now the new majority" (Bear, 1997, p. 7). The "10 year degree program" that students jokingly referred to has become the norm for many of our nontraditional students today. Educational opportunities need to fit into working peoples lives, and as a result, more colleges and universities are increasing their number of distance learning programs. Through distance learning, workers can obtain the education they desire without leaving the job they need to maintain (Dixon, 1996). Educators must be responsive to the consumer demand for convenience education, redefining programs through substantial location independence and technology.

According to the United States Distance Learning Association (1999), corporations save millions of dollars each year by using distance learning programs to train their employees. It estimates that in the United States alone, corporations face the retraining of 50 million American workers. The costs and inconveniences of maintaining a well-trained workforce can be greatly reduced through the use of distance learning programs primarily because there is equal access to information. The World Wide Web serves as a portal to unlimited numbers and types of multimedia documents, dynamic indexing among documents, and search engines that assist the user in identifying relevant documents (Grossman, 2000).

Studies questioning the effectiveness of distance learning programs in relation to traditionally based delivery methods have shown that they compare favorably. The United States Distance Learning Association (1999) found that studies have been quite consistent in finding that distance learning classrooms report similar results as those found using traditional instructional methods. A study by Souder (1993) concluded that distance learning students performed as well or better than traditional students in the same program. He also concluded that the distance learning students in particular acquired valuable social skills and a peer network. This is reflected in a survey conducted by the Distance Education and Training council which found that 94% of employees surveyed stated that distance learning graduates compared favorably in skills, knowledge, and attitude with graduates of traditional programs. The survey also found that 97% of the employers said that they would encourage others to enroll in distance education programs to increase their job competence (Dixon, 1996). The use the

distance learning instruction continues to increase both throughout the United States as well as the rest of the world. Prestigious American institutes such as the University of Tennessee, Duke University, the University of California at Berkeley, and Pennsylvania State University are just a few who have developed distance learning programs. In the United Kingdom, the Open University is educating one-fourth of all MBA students in the U.K. exclusively via distance education (Mergendoller, 1996)

However, the retention rate of students who take courses through the distance learning environment has been lower than those who elect to take traditional courses. The question must be asked: Why are retention rates lower for these students? A possible reason may be that individuals, because of their preferred learning style, not being able to successfully learn the material to do well in distance learning courses, and decide to discontinue their educational pursuits. This study attempted to determine if it is possible to predict whether a student is suited for distance learning courses by determining their preferred learning style. If it is determined that individuals with certain learning styles will do better in distance learning courses than those with other styles, then administering a simple learning style inventory instrument to perspective students would provide counselors an indication as to whether the individual should pursue distance learning courses. This could assist in increasing the retention rate in that students would be aware of what would be the best educational delivery method for them to pursue based on their learning style, thereby affecting the retention and subsequent success rate at various universities. It would also alert students who still follow the path in pursuit of distance learning courses of some of the problems they may encounter based on their individual style of learning.

The study was composed of students from the University of West Florida and Embry-Riddle Aeronautical University who had taken courses utilizing both delivery methodologies. It only considered courses in the student's major area of study, and only students who had completed at least nine hours in each delivery methodology. The study first employed the Kolb Learning Style Inventory (LSI) instrument to determine the learning modality of a student. The Inventory is a self-descriptive test, based on experiential learning theory, which is designed to measure the strengths and weaknesses of a learner in the four stages of the learning process. According to the LSI there are four different learning modes: concrete experience (CE), students must be able to involve themselves fully and openly without bias in new experiences; reflective observation (RO), students must be able to reflect on and observe experiences from many perspectives; abstract conceptualization (AC), students must be able to create concepts and integrate observations into logically sound theories; and active experimentation (AE) students must be able to use theories to make decisions and solve problems (Osland, Kolb & Rubin, 2001).

The LSI measures a student's emphasis on the four learning modes by asking them to rank order a series of four words that describes the four different abilities. An example of a series of words and the learning mode which they reflect would be feeling (CE), watching (RO), thinking (AC) and doing (AE). Combination scores then indicate the extent to which the student emphasizes abstractness over concreteness and active experimentation over reflection (AE-RO) (Osland, Kolb & Rubin, 2001). While the LSI does not measure an individual's learning style with 100% accuracy, it presents an indication of how an individual perceives him or herself as a learner.

Kolb's learning style model classifies learners as having a preference for concrete experience or abstract conceptualization in how learners take in information. Kolb's model further classifies learners with a preference for active experimentation or reflective observation in describing how learners internalize information (Conner, 2003). Subsequently, these combinations of learning preferences result in four potential types of styles.

1. **Divergent Style: (Concrete Experience, Reflective Observation)**
The focus of this style resides with the imagination and value awareness. These individuals are capable of viewing situations from diverse perspectives. These individuals integrate brainstorming strategies which emphasize social interaction. These learners respond well to explanations of how course material relates to their experience, their interests, and their future careers. The instructor should function as a motivator.
2. **Assimilator Style: (Abstract Conceptualization, Reflective Observation)** This style focuses on the ability to create models by integrating disparate information into full explanations. This style focuses less on people and emphasizes the abstract ideas. These learners respond to information presented in an organized, logical fashion and benefit if they have time for reflection. The instructor should function as an expert.
3. **Convergent Style: (Abstract conceptualization, Active Experimentation)** The greatest strength for this style lies in problem solving, decision making and the practical application of ideas. These learners do well in situations where there is a single correct answer. These learners choose technical tasks over interpersonal situations. These learners respond to having opportunities to work actively on well-defined tasks and to learn by trial-and-error in an environment that allows them to fail safely. The instructor should function as a coach, providing guided practice and feedback.
4. **Accommodator Style: (Concrete Experience, Active Experimentation)** These learners enjoy implementing plans and experiencing innovative situations. These learners like applying course material in new situations to solve real problems. The

instructor should stay out of the way, maximizing opportunities for the students to discover things for themselves (Kolb, 1984).

Students participating in the study completed the LSI inventory, and subsequently their learning style was calculated into a single data point that combines the scores of the four basic modes. Once this was completed, the grade point average (GPA) achieved in the classes taken in each delivery method was quantified utilizing a t-test for independent means to determine if there was significance between the GPA's. This determined, based on the LSI, whether there was a difference between GPA's attained for the traditional verses distance learning courses. An analysis of variance (ANOVA) was then conducted utilizing the four LSI styles to ascertain if there is a significant difference between traditional and distance learning GPA's between the groups. After an F correlation determined significance, a Scheffe test was conducted to determine significance between the groups.

The goal of this study was to determine, through the use of a learning style inventory instrument, the individual learning styles which are better suited for the traditional classroom environment, and those which would prove successful in the distance learning environment.

The research hypothesis states that there will be a significant difference in student performance in distance learning courses, as opposed to courses delivered in the traditional classroom environment, based upon the individual learning style. The null hypothesis states that there will be no significant difference in the performance of students in distance learning and traditional delivered courses, based upon their individual learning style, as measured at the $\alpha=.05$ level of significance.

The data received from the surveys was quantified to determine if there was a significant difference between the grade point average a student received in traditional classes and distance learning classes based upon their individual learning style. A previous study on learning styles utilizing the Kolb inventory found that only those individuals with the "Assimilator" style would, at the $\alpha= .05$ level of significance, select a traditional class over a distance learning class (Schultz & Schultz, 2003). Individual t-tests were performed within each learning style, comparing the students' grade point averages they reported for their traditional and distance learning classes. An Analysis of Variance (ANOVA) test was performed comparing the grade point averages between the four groups for both traditional and distance learning courses. A Scheffe test was also conducted to determine the level of significance between the groups.

t-Test Results

Accommodator

GPA Traditional Courses	3.07
GPA Distance Learning Courses	2.96
Value for t	0.8408
Critical value for t	1.99

Assimilator

GPA Traditional Courses	3.14
GPA Distance Learning Courses	2.76
Value for t	3.1125
Critical value for t	2.00

Converger

GPA Traditional Courses	2.94
GPA Distance Learning Courses	3.03
Value for t	0.4647
Critical value for t	1.98

Diverger

GPA Traditional Courses	2.93
GPA Distance Learning Courses	2.99
Value for t	0.55157
Critical value for t	2.00

ANOVA Results for Distance Learning Courses

F Value	2.0308
Critical Value@.05	2.6802

<u>Accommodator</u> <u>Assimilator</u>	1.0173
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<u>Accommodator</u> <u>Converger</u>	0.1400
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<u>Accommodator</u> <u>Diverger</u>	0.329
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<u>Assimilator</u> <u>Diverger</u>	0.6634
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<u>Converger</u> <u>Diverger</u>	0.3036
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Assimilator 1.9156
Converger

ANOVA Results for Traditional Courses

F Value 0.8858
Critical Value@.05 2.6802

Accommodator 0.1326
Assimilator

Accommodator 0.3213
Converger

Accommodator 0.0003
Diverger

Assimilator 0.1153
Diverger

Converger 0.3243
Diverger

Assimilator 0.8548
Converger

Results from the t-tests revealed the only in the case of the Assimilator did a significant difference exist between the grade point average of courses taken between courses taken through distance learning and traditional delivery modes. The grade point average for the traditional courses of 3.14 was significantly higher than those taken through the distance learning delivery of 2.76. From the earlier study by Schultz and Schultz (2003), this might have been expected since this group was the only one of the four which significantly favored enrolling in traditional delivery courses as opposed to distance learning courses. According to the Kolb Learning Styles, assimilators respond to information presented in an organized, logical fashion and benefit if they have time for reflection. This style, where the instructor functions as an expert, is much more typical with courses delivered in the traditional fashion of the teacher and students in the classroom as opposed to an on-line delivery format.

The study also found that there was no significant difference in grade point averages between the four groups of either distance learning or traditionally delivered courses when the grade point averages were quantified using an ANOVA test. Grade point averages in Distance Learning courses ranged from 3.03 to 2.76 and from 3.14 to 2.97 in traditional courses.

Results from this study revealed that there is no significant difference in grade point averages between students taking traditional courses, as opposed to distance learning courses in terms of the four different learning styles described by the KOLB Learning Inventory. All seem to perform at the same level. However in terms of differences in performance between students in individual learning styles, a significant difference was noticed when comparing the scores of those students classified as Assimilators. For these students their performance was significantly better when taking courses delivered in the traditional delivery mode as compared to on-line delivery.

The research hypothesis for this study stated that there will be a significant difference in student performance in distance learning courses, as opposed to courses delivered in the traditional classroom environment, based upon the individual learning style. The null hypothesis states that there will be no significant difference in the performance of students in distance learning and traditional delivered courses, based upon their individual learning style, as measured at the $\alpha=.05$ level of significance. Based on the results the research hypothesis was supported, but only in the case of those students classified as Assimilators.

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