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Stephen J. McCaskey
Southern Illinois University Carbondale

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Additional Information

As we progress further into the information age, many institutions and schools are turning to technology to enhance their programs and expand their horizons as students may self-select into or away from distant learning classes. Through the use of videoconferencing, schools are able to deliver course and degree programs to students in distant locations without requiring them to set foot in a traditional classroom. This study compared the preferred learning styles of students enrolled in traditional and non-traditional course delivery to assist faculty and instructors in class preparation, designing class delivery methods, choosing educational technologies, and developing sensitivity to differing student learning preferences within the distant education environment.

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IN ON AND OFF CAMPUS ENVIRONMENTS

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Abstract

As we progress further into the information age, many institutions and schools are turning to technology to enhance their programs and expand their horizons as students may self-select into or away from distant learning classes. Through the use of videoconferencing, schools are able to deliver course and degree programs to students in distant locations without requiring them to set foot in a traditional classroom. This study compared the preferred learning styles of students enrolled in traditional and non-traditional course delivery to assist faculty and instructors in class preparation, designing class delivery methods, choosing educational technologies, and developing sensitivity to differing student learning preferences within the distant education environment.

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Introduction

The idea that people learn differently is widely accepted (Wratcher, Morrison, Riley, & Scheirton, 1997). Educators know that some students prefer certain methods of learning more than others. These behavioral tendencies referred to as learning styles form a student's unique learning preference and an awareness of them will aid teachers in the planning of small-group and individualized instruction (Kemp, Morrison, & Ross, 1998). Grasha (1996) defined learning styles as "personal qualities that influence a student's ability to acquire information, to interact with peers and the teacher, and otherwise to participate in learning experiences" (p. 41). Personal qualities are what make individuals different from other people. For example, how you get along with people, how you behave in different situation, your suitability for a course, job, or training situation, and your attitude to life and work.

Blackmore (1996) suggested that one of the first things teachers can do to aid the learning process is simply to be aware that there are diverse learning styles in the student population:

There are probably as many ways to teach as there are to learn. Perhaps the most important thing is to be aware that people do not all see the world in the same way. They may have very different preferences than you for how, when, where and how often to learn (para. 6).

Although instructors, course/curriculum developers, and instructional media professionals are aware that different learning styles exist, the application of this knowledge is often underutilized in a classroom setting. Some instructors simply opt to use a wide variety of teaching activities, hoping that they will address most student learning preferences along the way. This method, though expedient, may not be the most effective way to address student learning preferences. Sarasin (1998) stated, "…teachers should try to ensure that their methods, materials, and resources fit the ways in which their students learn and maximize the learning potential of each student" (p. 2). Furthermore, many teachers think that the same teaching methods that work in their traditional classes will also work for distance learning. The underlying assumption is that students who enroll in distance education classes have the same learning preferences as those in traditional classes. Faculty often assume that teaching styles, and accompanying classroom processes, are like a *master key* and thus appropriate for any setting (Thompson, 1998).

There is not an overabundance of research on learning styles and their relationship to distance education (Diaz & Cartnal, 1999). Most of the studies focus on the discovery of relationships between learning styles and specific student achievement outcomes: dropout rate, completion rate, attitudes about learning, and predictors of high risk (Diaz et

al, 1999). There is a lack of research on the relationship of learning styles to factors external to students. This lack of evidence, based on the researcher's review of literature suggests why the current research focused on the relationship between learning styles and the student's learning environment. Specifically, utilization of social learning style inventories provide education and training institutions with an increased sensitivity to differing student learning preferences and will assist in the development of curriculum.

The purpose of this study is to compare the preferred learning styles of students enrolled in traditional (face-to-face) and non-traditional (distant education) course delivery. More specifically, the preferred social interaction learning style of students on and off-campus receiving synchronous instruction were compared to investigate differences in learning preferences in the context of alternate learning environments. This information is useful in assisting instructors, course/curriculum developers, and others, in planning courses concurrently delivered to on and off-campus students to address appropriate learning preferences, thus matching teaching strategies with learning styles.

Distance Education

"Distance education can best be described as the separation of student and instructor during the process of education delivery" (Swift, Wilson, & Wayland, 1997, p. 1). Distance education allows students to be in different geographic locations and receive instruction from the teacher at the same time. Steiner (1999) identified the defining elements of distance education as "the separation of teacher and learner during at least a majority of each instructional process and the use of educational media to unite teacher and learner and carry course content" (p. 1). Distant learning, for the purposes of this study, was conducted via videoconferencing.

Schools design distance education programs to meet the needs of nontraditional adult learners. The proportion of college students who are adult learners is increasing steadily. Fewer than one in six undergraduates fit the traditional stereotype of the American college student: 18 to 22 years of age, attending college full time, and living on campus (Gatien & Griffiths, 1999). Adult learners differ from traditional students in many ways: how they view the world, make judgments, and prioritize their education responsibilities (Hand, 1992). There is wide acceptance of individual differences in ability, motivation, values, attitudes, and personality of adult learners (Perry, 1994).

Areas Affecting Traditional Classroom / Distance Education

Thompson, Orr, and Thompson identified four areas affecting the success in both distance education and traditional classroom environment: (a) student learning, (b) instructional techniques, (c) medium, and (d) attitudes (2001).

Student Learning

Smith (1994) reported that students rated distance education courses similar in quality to traditionally taught courses; however, students and faculty members indicated a preference for conventional instruction over distance education. In a technical college study, Hogan (1998) found that distance learning students' grades were .27 points higher

than those in traditional courses and that distance learning students had higher completion rates than traditional students.

Koch (1998) also found that distance learning students earned higher grades than did students in traditional courses. Shneiderman, Borkowski, Alavi, and Norman (1998) found that students rated their learning effectiveness in the distance education classroom significantly higher than in the traditional classroom. However, Treagust, Waldrip, and Horley (1993) found no statistically significant differences in student learning when comparing distance education courses with regularly scheduled courses.
Instructional Techniques

In distance education, students perceived instructor-to-class interaction as positive and moderately correlated with the perception of learner-to-learner interaction. Students enrolled in distance education classes compared to students in traditional education courses indicated learner-to-instructor and learner-to-content interactions as important. Both groups indicated overall support for small group process. This indicates the need for faculty to visit each remote site at least once during the course, ensuring that all students have *in person* time with the instructor (Swift, et al., 1997).

Faculty members who teach by distance education must utilize a variety of teaching methods such as lecture, seminar-style discussions, case analyses, group presentations, individual presentations, video case studies, and computer demonstrations (Case, Gutknecht, Pickett, & Wilson as cited in Swift et al., 1997). Willis (1993) offered several instructional techniques needed to effectively teach by distance education:

- Hands-on training with the technology used to deliver instruction is critical for both teacher and students.

- The teacher must learn about students' backgrounds and experiences; discuss rules, procedures, guidelines, and standards; and consistently uphold procedures.

- The teacher should contact each site or student every week.

- Students must give regular feedback regarding course content, delivery problems, and instructional concerns.

The instructional techniques used in distance education may be a distraction for students at the host site. Host site students were quite clear about their dislike of attending a distance learning classroom (Willis, 1993). One plausible solution to this barrier would separate the host site classroom from the distance education classroom. The instructor could then focus entirely on students at the remote sites, and host site students could attend traditional classroom courses without any of the distractions caused by a distance learning course (Thomerson & Smith, 1996).

Medium

The technology used to make distance education available to remote classrooms can affect the classroom environment and create problems for student learning. In one study, students reported that they liked the multimedia hands-on capabilities of the electronic distance classroom; however, factors such as quality of transmission and capability of equipment could create problems (Shneiderman et al., 1998). In a similar study, distance education students rated statements dealing with the learning environment lower than students in a traditional classroom. They had difficulty hearing at their remote sites and the equipment caused many problems, which disrupted the class. Class time was lost while equipment was adjusted to bring all sites on line (Thomerson & Smith, 1996).

Attitude

Shneiderman et al. (1998) found that students were highly satisfied with their experiences and indicated that they would take another distance education course. Further, the research found that technology-enhanced learning could lead to statistically significantly higher levels of perceived skill development, self- reported learning, and evaluation of classroom experiences as compared to collaborative learning in a traditional educational setting.

In a study of 288 undergraduate college students in distance education classes at remote sites, students reported overall satisfaction with the courses (Biner, Welsh, Barone, Summers, & Dean, 1997). This study supported the contention that remote site group size affects both the satisfaction and motivation of students enrolled in distance education college- level courses; larger classes were associated with more negative student attitudes, as well as with lower levels of relative performance. Other authors have reported that often students feel isolated, leading to negative feelings (Galusha, 1998; Treagust et al, 1993).

Koch (1998) found no significant differences with satisfaction of distance education courses between men and women and that students' age, marital status, or major were not related to students' anxiety toward distance education.

Pugh and Siantz (1995) assessed student satisfaction in a study between two university campuses (host sites) and between a university campus and a business location (remote site). The instructor alternated between the two sites. This study (Thompson, Orr & Thompson, 2001) found that the students preferred the host-site location to the remote site.

Diaz and Bontenbal (2001) indicated there are areas that affect student learning and that some students prefer certain methods of learning over others. These traits referred to as learning styles or learning preferences, form a student's unique inclination for learning.

Learning Styles / Preferences

Students' performance may be related to their learning preferences or styles. Students may also self-select into or away from distance learning classes. As a result, success in distance learning classes may ultimately depend on understanding the learning styles of the students who enroll. Because more online courses will invariably be offered in the future, some assurance must be provided to the college, the faculty, and the students that distance education will meet expectations for a good education. Not only will students expect an education that is equal in quality to that provided by traditional offerings, they will expect a student-centered learning environment, designed to meet their individual needs.

According to Diaz and Cartnal (1999), there have been few studies on the relationship of learning styles to student success in a distance learning environment. The purpose of their study was to compare the student learning styles of online and equivalent on-campus, health education classes. As defined by Grasha (1996) there are four commonly preferred learning styles, independent, dependant, collaborative, and participant. A brief discussion of each learning style:

- Independent - students prefer independent study, self-paced instruction, and would prefer to work alone on course projects than with other students.

- Dependent - learners look to the teacher and to peers as a source of structure and guidance and prefer an authority figure to tell them what to do.

- Collaborative - learners acquire information by sharing and by cooperating with teacher and peers. They prefer lectures with small group discussions and group projects.

- Participant - learners are interested in class activities and discussion, and are eager to do as much class work as possible. They are keenly aware of, and have a desire to meet, teacher expectations.

A faculty member, using the data collected in the Diaz and Cartnel (1999) and current study, could plan learning opportunities that would emphasize the learning preferences associated with each of the commonly preferred learning styles, thus matching teaching strategies with learning styles.

Of particular interest in a previous study (Diaz & Carnal, 1999) were the significant differences between the groups in the independent and dependent categories. The distance students more strongly favored independent learning styles. It is not surprising that students who prefer independent instruction would self-select into an off-site class. It may be that they are well suited to the relative isolation of the distance learning environment. Gee (1990) noted that successful telecourse students favored an independent learning style. James and Gardner (1995) suggested that students who

favored reliance on independent learning skills would be more suited to a distance format.

As a result of these significant differences, teaching strategies in the distance class should emphasize relatively more independent and fewer dependent learning opportunities. This approach has practical significance given that professors often complain of too little class time to devote to learning objectives (Diaz et al, 1999). Armed with learning style data, instructors can more efficiently allocate instructional time to various learning types.

This research sought to find answers to the following questions: (a) what is the preferred social interaction learning style of on and off-campus students, (b) what are the relationships among social interaction learning styles for on and off-campus, and (c) what are the preferred social interaction learning styles of students in on and off-campus environment?

Method

To obtain the current social interaction learning style data, this study focused on a descriptive research plan, specifically, a causal-comparative methodology to identify the relationship between variables. According to Best and Kahn (2006), descriptive research attempts to find generalizable attributes and deals with present conditions. "Descriptive research seeks to find answers to questions through the analysis of variable relationships" (Best & Kahn, 2006, p. 133). In this study, the dependent variable was the preferred social learning style from the Grasha-Reichmann Student Learning Style Scales (GRSLSS) instrument (Hruska-Riechmann & Grasha, 1982). The independent variable was course delivery method with two levels: (a) synchronous instruction via videoconferencing, and (b) synchronous instruction via traditional classroom.

Procedures

Students enrolled in a training needs assessment class offered concurrently through distance education (videoconferencing) class and on-campus class were asked to complete the on-line version of the Grasha-Riechmann Student Learning Styles Scales (GRSLSS) within the first month of class. The researcher provided the off-campus students an e-mail address requesting they supply a mailing address to receive the following: (a) informed consent letter, (d) demographics questionnaire, (c) letter providing the instrument URL and a brief definition of the six learning styles, and (d) self-addressed stamped envelope. If they agreed to participate in this study, they were asked to sign the informed consent letter, provide their information on the demographics questionnaire, complete and print the on-line instrument, and return the completed items into the original envelope.

The on-campus students received the first three items mentioned above. If they agreed to participate, they were asked to sign the identical informed consent letter, complete the demographics questionnaire and complete and print the on-line instrument; however, place the completed items into the original envelope.

The researcher issued the material to on-campus students in a videoconferencing classroom and gathered all data on requested due date then analyzed the data using SPSS 12.0 for Windows. As described in an earlier section of this paper, three separate research questions concerning social interaction learning style were investigated. Consequently, varied procedures were required to test the specific questions related to each inquiry, as described below.

Data Analysis

The researcher investigated preferred social interaction learning style of on and off-campus students as measured by the Grasha-Reichmann Student Learning Style Scales (GRSLSS), using descriptive statistics and nonparametric tests.

The nonparametric Spearman rank-order correlation tested whether statistically significant relationship existed between preferred social interaction learning style of students and their participation in on and off-campus environment. Likewise, the nonparametric Mann-Whitney U Test determined whether the mean preferred learning styles of on-campus students were significantly different than those reported by off-campus students[1]

Findings

Findings for this study are discussed relative to the three research questions posed for the study. Analysis of data determined on-campus students had a higher perception of the following social interaction learning styles: (a) avoidant, (b) collaborative, and (c) dependent. In contrast, off-campus students had a higher perception, and preferred the following social interaction learning styles: (a) independent, (b) competitive, and (c) participant.

Additionally, analysis of data for the on-campus students provided a positive significant statistical relationship between competitive and participant learning style and a negative correlation between the collaborative and dependent styles. In the off-campus group, a significant statistical negative relationship between avoidant and participant learning style was found. Also, in the off-campus group, there was a positive correlation between independence, avoidance, and the competitive learning style. There was a negative correlation in the off-campus group between independence, collaboration, and participant learning styles.

Discussion

Gibson (1998) has challenged traditional and distance education instructors to *know the learner.* In the present study, there was a significant difference in the preferred social interaction learning style, avoidant. More specifically, the on-campus students were less enthusiastic about attending class or acquiring class content than the off-campus students. Additionally, based on the definition of avoidant (Grasha 1996), on-campus students were uninterested and sometimes overwhelmed by class activities.

One plausible explanation for the significant difference, between the preferred social interaction learning style avoidant, was the age difference in on and off-campus students. The median age for on-campus students was 28.5 and for off-campus students was 40. In a previous study (Diaz & Carnal, 1999) utilizing the GRSLSS that compared the online learner to the on-campus learner, the age difference and results were similar to this study. Grasha (1999) stated that younger students displayed higher levels of avoidance and lower levels of participation in the classroom, and older students tend to be more independent and participatory in their learning styles. Likewise, data from the current study support Grasha's findings.

The results of this study are similar to previous results (Diaz & Carnal, 1999) associated with the six preferred social interaction learning styles, with two exceptions; competitive and participative. In both studies: (a) off-campus participants preferred the independent social interaction learning styles, (b) the participants with youngest median age preferred the avoidant social interaction learning style, and (c) on-campus participants preferred the collaborative and dependant social interaction learning styles. Only in this study did the off-campus participants prefer the competitive and participant social interaction learning styles. Grasha indicated that students, who prefer the competitive learning style, learn to perform better than their peers and strive to receive recognition for their academic accomplishments. Furthermore, students who prefer the participant learning style are interested in class activities and discussion, and are eager to do as much class work as possible.

One plausible explanation for the contrast in results was related to the difference between the course delivery methods for off-campus participants. In this study, the off-campus learners were in a classroom connected to the campus classroom and instructor via videoconferencing. Off-campus participants in the Diaz study completed their course on-line without classmate and instructor interaction. This implies that interaction with peers is required for competitive and participant learners.

Recommendations

This study increased the body of knowledge about social interaction learning styles. However, further research is required to enhance this area of interest. Based on the findings of this research the following recommendations are made: (a) further research should be conducted utilizing the GRSLSS instrument with a larger population both on and off-campus, (b) further research should be conducted utilizing the teaching styles inventory (Grasha, 1996) in addition to the GRSLSS, (c) the GRSLSS instrument should be administered to both online students and traditional classroom students. Specifically, online participants completing their course work without classmate and instructor interaction, and (d) true random sampling techniques should be utilized to increase generalizability and external validity.

Conclusions

"As technology becomes an important medium for education delivery, more and more courses will be offered in a distant format" (Sarasin, 1998 p. 121). Though faculty

may attempt to use the same teaching methods in a distance environment that they would employ in an on-campus class, this researcher found that faculty encounter significantly different learning preferences as well as other different student characteristics. Professors may want to employ learning style inventories to better prepare for distance classes, as well as traditional classes, and to adapt their teaching methods to the preferences of the learners. Diaz and Cartnel (1999) suggested, "faculty should use social learning style inventories and resulting data for help in class preparation, designing class delivery methods, choosing educational technologies, and developing sensitivity to differing student learning preferences within the distant education environment" (p. 128).

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[1] When a non-probability sampling technique is used, there are no statistical techniques that allow for measurement of sampling error, and therefore it is not appropriate to project sample characteristics to the population through parametric inferential statistics. When assumptions are markedly violated, one should use a nonparametric equivalent of the Pearson correlation coefficient (Morgan & Griego, 1989).