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ONLINE AND TRADITIONAL STUDENT DIFFERENCES

Differences between online and traditional students:
A study of motivational orientation, self-efficacy, and attitudes

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ABSTRACT

The purpose of the present study was to evaluate the differences in demographic characteristics, motivational orientation, self-efficacy, and attitudes about technology between students who enrolled in a course offered in the traditional setting and those enrolled in the same course online. The two groups, each comprised of 27 students, were administered self-report measures to evaluate their levels of technological self-efficacy, attitude toward technology, and motivational orientation. Participants also reported their age, number of online courses taken, and gender. Results indicated that the two groups did not differ in terms of their attitudes about and feelings of self-efficacy toward technology. Despite many similarities in motivational orientation, online students did report higher levels of interest, curiosity, and intrinsic motivation, suggesting that students in online courses may prefer autonomy in the course design. Further research is necessary to determine whether students seek out online courses because they possess motivation or if online courses create motivation.

Keywords: **Motivational orientation, online learning, self-efficacy.**

INTRODUCTION

When developing a course, most instructors begin with describing the specific learning goals that are to be attained by students. In constructing learning goals, it is important to consider the motivation, self-efficacy, and attitudes of the students in the class, which can be a difficult task. Course development is becoming even more challenging as the popularity of distance education increases. Instructors developing online courses are faced with the question of whether the students in these classes are fundamentally different from students in traditional courses. If there are differences between the types of students who enroll in online versus traditional classes, instructors would need to be mindful of the differences when designing various aspects of the course.

In their review of distance education research, Tallent-Runnels et al. (in press) found that there were some demographic differences between students in online and traditional courses. In terms of age and racial differences the majority of students enrolling in online courses were non-traditional and Anglo-American. Qureshi, Morton, and Antosz (2002) described the typical student enrolled in distance education courses as a female between the ages of 18 and 40 who did not possess the time to attend on-campus classes due to family and work commitments. Dutton, Dutton, and Perry (2002) also described online students as older and more greatly committed to responsibilities such as work and children. In addition, Dutton et al. (2002) found that students enrolled in distance education courses were less likely to be seeking traditional undergraduate degrees.

Although most agree that online learners tend to be nontraditional and constrained by adult responsibilities, the motivational style that these students bring to the classroom is not well understood. Qureshi et al. (2002) noted that distance education students were less motivated than their on-campus peers. Others have expressed concern that online learners experience motivational problems as evidenced by high dropout rates (Cheng-Yuan 2000). However, Dutton et al. (2002) found that online students were likely to have the same level of motivation to complete a course as traditional undergraduate students. In addition, Roblyer (1999) found that online students prefer the autonomy associated with the self-paced online learning process suggesting that online students may be more highly self-regulated and autonomous in comparison to their on-campus counterparts who prefer face-to-face interaction with the instructor. Clearly, more evidence is needed to determine whether students in online courses are more or less motivated than students in traditional courses.

Understanding whether there are differences in motivation levels between students in online and traditional courses would be helpful in guiding course design. However, it is also important to determine if online versus traditional students possess different types of motivation. Motivational orientation refers to the reasons that individuals ascribe to their engagement in a specific task (Brophy 1998). For example, if students perceive that they are completing a homework assignment because they are forced to do so by their instructor to achieve a specific grade, they are extrinsically motivated. In other words, their motivation comes from outside of themselves. However, other students may perceive their engagement in the same task as an opportunity to simply know more about a topic that they find interesting. These students are intrinsically motivated, or are learning simply for the sake of learning.

Although both intrinsically motivated and extrinsically motivated students can enjoy academic success (Lepper and Henderlong 2000), many believe that intrinsically motivated students have the advantage (Stipek 1992). Researchers have documented that intrinsically oriented students tend to be more creative (Amabile 1983; Amabile, Hennessey, and Grossman 1986), experience greater conceptual gains in understanding (Grolnick and Ryan 1987; Stipek et al. 1998), and are more likely to remain interested in learning (Ryan and Deci 2000). These benefits are a result of an agenda for learning and the excitement associated with simply learning something new. Students with an intrinsic orientation are guided by the desire to learn, not the benefits of pleasing the instructor. In addition, these students are less likely to perform only to the level required to achieve a certain grade. If in fact, online students value the autonomy of online learning environments (Roblyer 1999) this could be an indication that they are also more intrinsically motivated than students in traditional courses. As a result, course learning goals and assignments for online classes would need to be designed with the characteristics of intrinsically motivated students in mind.

While understanding motivational differences between students in online and traditional classes is important, it is also imperative to understand if there are differences in prior technological experience. Clearly, the types of learning goals and course assignments designed by an instructor need to match the technological abilities of his or her students. Dutton et al. (2002) found that students enrolled in distance education courses were more likely to have greater experience working with computers. In addition, Qureshi et al. (2002) found that students who enrolled in online classes possessed higher degrees of proficiency with the Internet and e-mail than those taking traditional courses. Therefore, instructors of online courses may be correct in having higher expectations for their students in terms of using technology.

For online students, a benefit of using technology may be greater feelings of self-efficacy toward technology. When investigating what factors influenced students to continue their enrollment in online courses, Richards and Ridley (1997) found that students wanted more training in basic computer skills. Qureshi et al. (2002) posited that through the enrollment in online courses, students gain technological experience that serves as a

motivator for their enrollment in future online classes. This reasoning is consistent with Bandura's (1986) suggestion that self-efficacy develops based, in part, on one's prior mastery experiences in a specific domain. Self-efficacy refers to individuals' confidence in their ability to successfully utilize their skills and knowledge (Bandura 1986). As self-efficacy increases, students' performance in academic domains increases (Bandura 1993; Pajares and Graham 1999; Pajares and Kranzler 1995). Students who believe they have the ability to utilize their skills and knowledge to accomplish a task successfully will continue to work on the activity despite its challenges. Furthermore, when making decisions concerning what challenges to attempt, those high in self-efficacy will be more likely to estimate that they can succeed in more difficult tasks. As a result, online instructors may be able to design more demanding learning tasks because online students with high self-efficacy would be more confident in their abilities and persistent when faced with obstacles.

Numerous studies have found a relationship between college students using computer technology and having more positive attitudes about the technology (Anderson and Hornby 1996; Milbrath and Kinzie 2000; Parish and Necessary 1996). Parish and Necessary (1996) found that college students were less anxious about using a computer, had more confidence in their abilities, and reported liking computers more if they owned or voluntarily used a computer. Attitudes about computer technology may also be influenced by requiring technology use as part of undergraduate coursework. Milbrath and Kinzie (2000) examined the attitudes toward computer technology of college students in a teacher education program that required enrollment in technology courses. The students reported significantly less anxiety about using computer technology over time. In addition, the students had significantly more positive attitudes about the usefulness of computer technology over time (Milbrath and Kinzie 2000). In Dutton et al. (2002) distance education students were more likely to have experience using computers, so it may be the case that online students possess more positive attitudes about computer technology.

The purpose of the present study was to evaluate the differences in demographic characteristics, motivational orientation, self-efficacy, and attitudes about technology across two groups of students, those taking a course online and those taking the same course on campus. It was hypothesized that the students in the online section would be older and predominantly female. In terms of motivational orientation, it was hypothesized that the online students would possess greater intrinsic motivation. Although we did not evaluate whether online students' feelings of technological self-efficacy and attitudes toward technology increased as a result of their online experiences, we did measure students' technological self-efficacy and attitude to first evaluate if online students were more self-efficacious and felt more positively toward technology in this domain. In addition, we wanted to ensure that any differences in motivational orientation could not be better accounted for by variations in technological self-efficacy and attitudes toward technology. In other words, we were interested in the feelings of mastery, or motivational orientation, associated with the course as a whole, not students' experience with technology. It was also hypothesized that students in the online section would report higher levels of self-efficacy and more positive attitudes about technology.

METHOD

Participants

Two class sections of Exceptional Child, a required psychology course for students entering the teaching profession at a small, Midwestern university were conveniently sampled for the present study. The selected university is the smallest campus of a large university system that tends to serve nontraditional students, or students who are older and who commute to campus in an attempt to negotiate the demands of family and work. Although one section was taught online and the other in the traditional classroom setting, the courses were similar in that the instructors required the same textbook, held similar teaching philosophies, and earned similar course evaluation ratings. All students enrolled

in both classes were invited to participate in the study, with 27 students volunteering from each class section for a total of 54 students. Only one student declined participation from the online section, and all students participated from the traditional section. Participants were overwhelmingly female (*n* = 44) and Caucasian (*n* = 52). The remaining two students described their ethnicity as Asian. The average age of participants was 28.69 (*SD* = 9.17).

Measures

Motivational orientation was assessed using Harter's (1980) Scale of Intrinsic Versus Extrinsic Orientation in the Classroom, which was slightly altered to include the term instructor rather than teacher. The scale is comprised of five subscales that have been supported through factor analysis, which in turn form two higher order factors. Harter (1981) described the first cluster consisting of subscales of a Preference for Challenge versus Preference for Easy Work Assigned, Curiosity/ Interest versus Teacher Approval, and Independent Mastery versus Dependence on the Teacher. The second cluster of subscales was defined by Independent judgment versus Reliance on Teacher's judgment and Internal versus External Criteria for Success/ Failure. Harter (1981) interpreted the first higher order factor as representing whether or not one is motivated to engage in the mastery process and the second higher order factor as explaining more cognitive-informational structures, or how much the student has learned about the manner in which school works.

Participants were presented with 30 items comprised of two short statements describing students. The participants were first asked to decide which description was most like them, and then asked whether this statement was only sort of true or really true for them. Several items were recoded at the direction of the scoring key prior to calculating totals. Total scores were derived by summing the values selected by the students. Each item was scored on a scale from 1 to 4, with the lowest score indicating maximum extrinsic orientation and the highest score suggesting maximum intrinsic orientation. Internal consistency estimates reported in the test manual were derived using the Kuder-

Richardson Formula 20 and yielded reliabilities ranging from .78 to .84, .68 to .82, .70 to .78, .72 to .81, and .75 to .83, for the subscales of Challenge, Independent Mastery, Curiosity, Judgment, and Criteria, respectively. A reliability estimate for the total score was not reported as the author reported that the use of the total score was not intended. Cronbach alpha coefficients for Challenge, Independent Mastery, Curiosity, Judgment, and Criteria for the present sample were .66, .65, .76, .78, and .77, respectively.

Cronbach's alpha coefficients for the two higher order factors, mastery and cognitive-informational structures were .86 and .89, respectively.

Self-Efficacy with Computer Technologies

Self-efficacy was assessed using the Self-Efficacy for Computer Technologies (SCT) instrument (Delcourt and Kinzie 1993). The measure was designed to assess individuals' confidence in using specific aspects of technology, including word processing, e-mail, and CD-ROM databases. Participants were asked to rate the degree of their confidence in using specific components of each technology using a 4-point, Likert-type scale, ranging from strongly disagree to strongly agree.

Delcourt and Kinzie (1993) using principal component analysis found that the 25 item instrument was comprised of a simple three factor structure related to the specific areas of technology addressed. The authors reported high internal consistency estimates ($r \geq .97$) for each subscale representing the three factors. Because the SCT was created close to a decade ago and students' experience with technology has likely steadily increased, we included three additional domains; spreadsheets, statistical packages, and presentation software; to assess technological self-efficacy. An internal consistency estimate for the total scale was .96 for the present sample.

Attitudes Toward Computer Technologies

Participants' attitudes toward technologies were evaluated using the Attitudes Toward Computer Technologies (ACT) instrument (Delcourt and Kinzie 1993). The measure consists of 19 items, with 11 items assessing the degree to which participants believe technology to be useful and the remaining items assessing the degree of comfort/ anxiety participants feel toward technology. Participants were presented with statements concerning computer technology (e.g., the thought of using computer technologies frightens me) and asked to rate the degree to which the statements described them using a 4-point, Likert-type scale ranging from strongly disagree to strongly agree. Delcourt and Kinzie (1993) using principal component analysis found that the 19 item instrument was comprised of a simple three factor structure. The first factor was labeled "anxiety/comfort", whereas the second and third factors were labeled "usefulness", with the second factor items positively stated and the third factor items negatively stated. The authors, using Cronbach's alpha, reported a high internal consistency estimate for the ACT (r = .89). Cronbach's alpha coefficient for the present sample was .78.

Online Course Experience

Participants were asked to write in the number of online courses they had taken.

Procedures

Participants were asked to complete a questionnaire to assist the researchers in learning more about the characteristics of students who use computers in learning. Students in the traditional course section were approached during a class session and completed the questionnaire in that setting. Those students enrolled in the online section were mailed the information with a postage paid envelope included for the information's return. All questionnaires were completed anonymously.

RESULTS

Demographic Comparisons

The overwhelming majority of participants in both groups were female students. In fact, both course sections were comprised of 22 female and five male students, a ratio that is not unusual for psychology and education courses at the selected institution. As a result, no differences in gender proportion were found between the two groups.

The mean age of participants enrolled in the online section (M = 30.26, SD = 10.11) was higher than that of participants enrolled in the traditional section (M = 27.11, SD = 8.00). However, an independent measures t test did not reveal the presence of a statistically significant difference ($t(52) = -1.27$, $p > .05$). As a result, we attributed the difference to chance. Evaluation of an estimate of effect size (η_p^2 = .03) supported this conclusion, suggesting that little association between age and group existed for this sample.

Online Courses

When asked the number of online courses taken in the past, participants enrolled in the traditional course section reported a mean of .30 (SD = 1.03), whereas those participants enrolled in the online course section reported a mean of 1.44 (SD = 2.83). Considerably greater variation in number was observed in the online group, which ranged from one student's report of taking 10 prior courses online and 20 students' report of no prior experience with online courses. The traditional group ranged from a high of 5 prior courses taken online reported by one student to a low of no prior courses taken online reported by 24 students. An independent measures t test corrected for inequality of variances did not reveal the presence of a statistically significant difference between the prior online course experience of participants enrolled in an online course and those enrolled in the traditional section ($t(52) = -1.98$, $p > .05$). Evaluation of an estimate of effect size (η_p^2 = .07) supported this conclusion, suggesting that little association between the number of online courses taken and group existed for this sample.

Table: 1
Motivation Means, Standard Deviations, and t-tests

	Mean	SD	*t*-value	*p* level
Challenge v. Easy Work			**-1.95**	**.06**
Traditional	**16.17**	**3.13**		
Online	**17.96**	**3.27**		
Curiosity/Interest v. Teacher Approval			**-2.42**	**.02**
Traditional	**15.44**	**2.54**		
Online	**17.39**	**3.03**		
Independent Mastery v. Dependence			**-1.94**	**.06**
Traditional	**15.26**	**2.62**		
Online	**17.35**	**4.53**		
Independent Judgment v. Teacher Judgment			**-.81**	**.42**
Traditional	**16.52**	**1.62**		
Online	**17.04**	**2.70**		
Internal v. External Criteria for Success			**-1.27**	**.21**
Traditional	**17.04**	**3.64**		
Online	**18.32**	**3.34**		
Mastery (Higher Order Factor)			**-2.65**	**.01**
Traditional	**46.87**	**7.33**		
Online	**52.69**	**7.99**		
Cognitive-Informational Structures			**-1.11**	**.27**
Traditional	**33.57**	**4.57**		
Online	**35.21**	**5.53**		

Self-Efficacy and Attitudes

Participants in the traditional course section (*M*= 146.82, *SD*= 24.31) reported slightly higher feelings of self-efficacy with computer technology than the online participants (*M* = 144.32, *SD* = 28.21). Again, an independent measures *t* test did not reveal a statistically significant difference between the two groups (*t*(50) = .342, *p* > .05). An estimate of effect size (η_p^2 = .002) further suggested little association between these variables for the sample. In addition, participants in the traditional course section (*M* = 61.15, *SD* = 6.71) reported a slightly more positive attitude toward the use of technology than their online counterparts (*M* = 60.48, *SD* = 7.26). Even so, an independent measures *t* test did not reveal a statistically significant difference between the two groups (*t*(52) = .35, *p* > .05). An estimate of effect size (η_p^2 = .002) also suggested little association between these variables for the sample.

Motivational Orientation

An analysis of covariance was utilized to evaluate mean differences in levels of motivational orientation, or mastery, between the online students and those enrolled in the traditional course. With both attitudes toward technology and technological self-efficacy utilized as covariates, a significant difference was found between the two groups (*F*(1) = 6.77, *p* <.05) with those enrolled in the online section reporting higher levels of mastery than those in the traditional section. An estimate of effect size ((η_p^2 = .11) indicates that the association between mastery and group is small. An independent measures *t*-test also suggested a significant difference between the groups, indicating

that attitude and self-efficacy were not needed as covariates as they failed to account for variance between the groups. Those participants enrolled in the online section reported higher levels of overall mastery than those enrolled in the traditional section ($t(47) = -2.65$, $p < .05$). Again, an estimate of effect size ($\eta_p^2 = .11$) suggests that the association between mastery and group is small.

Differences in motivational orientation were also evaluated across the five subscales as well as the second higher order factor (see Table 1). Only one difference was found in the subscale Curiosity/Interest versus Pleasing the Teacher/Getting Grades. Participants enrolled in the online course section reported higher levels of interest than their traditional counterparts ($t(47) = -2.42$, $p < .05$). An estimate of effect size ($\eta_p^2 = .13$) suggests that the association between interest and group is small.

DISCUSSION

We evaluated the differences in demographic characteristics, motivational orientation, self-efficacy, and attitudes toward technology between students enrolled in an on-campus course and students enrolled in the same course offered online. Although we were unable to design a study that utilized random assignment to the two groups, we were able to evaluate students enrolled in the same course who did not significantly differ in their age, gender, or the number of previous online courses taken. Because the majority of participants in the present study were nontraditional students, which reflects the selected university's student population, gender and age differences that emerged in several prior studies (e.g., Dutton, Dutton, and Perry 2002; Qureshi, Morton, and Antosz 2002) were not observed. Female and older students might have preferred the online section; however at this particular university the majority of students were older and female. As a result, the participants in each group were likely quite homogeneous, as evidenced by the comparisons.

Interestingly, students in the online and traditional classes did not differ in terms of their attitudes about and feelings of self-efficacy toward technology. Students in both types of courses had relatively positive attitudes regarding technology and felt moderately self-efficacious about using technology. It is important for instructors designing both types of courses to know that if students have previous experience using technology, instructors may be able to assign work that is technologically challenging. Also, instructors should recognize that attitudes and efficacy may not influence students' decisions to enroll in online courses. This suggests that students may be choosing online courses because of their convenience and not considering their technology skills and attitudes.

In accordance with Dutton et al. (2002), who found that online and on-campus students had the same level of motivation to complete a course, students in the present study who were in the online and traditional courses were similar in many ways in terms of their motivational orientation. Neither group of students reported differences in preferring challenging work to easy work, independent mastery to dependence on the teacher, independent judgement to reliance on the teacher's judgement, or having an internal criteria for success rather than an external criteria. In addition, both groups of students were similar in terms of understanding how school works. These findings contradict Qureshi et al. (2002) who found the distance education students in their sample to be less motivated than the on-campus students. It is helpful for instructors to know that in many ways the motivational orientation of online students may not differ significantly from traditional students. Therefore, the way that a course is structured and the types of assignments that are given in a traditional class may work equally as well in terms of maintaining motivation in an online class.

Despite their similarities in motivational orientation, online students did report some significant differences in the ways in which they are motivated compared to traditional students. In the present study, online students reported higher levels of interest or

curiosity as opposed to a need for the teacher's approval compared to the traditional students. In addition, the online students indicated that they were more motivated to engage in the mastery process that is based on intrinsic motivational factors (i.e. preferring challenging work, being curious and interested, and working toward independent mastery). These findings support the proposition of Roblyer (1999) that online students may possess high levels of motivation because they are more autonomous. The findings also lend support for our hypothesis that online students are more intrinsically motivated than traditional students.

A possible explanation for the differences in the motivational orientation of students in the present study is that students who already possess an intrinsic orientation are more likely to seek out learning environments that are more autonomous in an attempt to learn more. Furthermore, students may realize that to be successful in an online course they must have a greater ability to set goals and self-regulate, traits commonly associated with intrinsic orientations. Thus, students who are intrinsically motivated may recognize that they can meet these demands and choose to enroll, whereas those who are extrinsically motivated may understand their limitations and choose to not enroll.

The higher levels of intrinsic motivation found in the online students in the present study have important implications for instructors in terms of course design. Despite the advantages afforded to those possessing intrinsic motivation, many students in both online and traditional classes find themselves enrolling in required courses, seeking grades to meet predetermined cutoffs for admission to or continuation of an academic program, and trying to please instructors who hold great power over assessment and recommendation. Unfortunately, course designs often reflect an extrinsic motivational orientation with clear emphases on deadlines and grading policies as the norm. Interestingly, those intrinsically motivated students who enter such courses that do not encourage or support autonomy will tend to become extrinsic in their orientation, therefore losing the advantages that they were once in line to receive (Ryan and Deci 2000). Therefore, it is essential for online instructors to capitalize on the autonomy that online courses create to encourage and maintain the intrinsic motivation of their students.

Roblyer (1999) found that many students who choose to enter the online educational environment do so due to the autonomy that it supports. Similarly, the online students in the present study indicated that they were more motivated to engage in the mastery process, one component of which includes working toward independent mastery. Online students are able to work at their own pace, within certain guidelines, and are not exposed to the instructor in a face-to-face context. Online instructors should note that this latter attribute may allow students to focus on their own learning as well as interaction with peers rather than focus on pleasing the instructor. In addition, the online environment may be perceived as autonomy supportive to students as their control is enhanced and they can take greater time formulating and crafting responses that can often be posted at their desired frequency. Because autonomy supportive environments have been found to encourage intrinsic motivation in students (Valas and Slovik 1993), it is possible that the online learning environment itself could promote a more positive motivation for learning in its students.

Due to the limitations in the present study's design, such as the small sample size and lack of random selection and assignment, the aforementioned discussion should be further evaluated through continued research. Although generalization of the current results is questionable, researchers and instructors considering or using the online environment for teaching should be aware of the possibility that online students possess higher levels of intrinsic motivation compared to their traditional classroom peers. Therefore, online instructors would need to be particularly mindful of constructing learning goals and assignments that foster curiosity and independent mastery.

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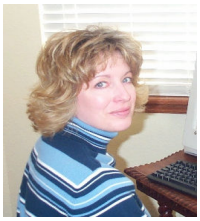

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