

DISTINGUISHING SENSE OF COMMUNITY AND MOTIVATION CHARACTERISTICS BETWEEN ONLINE AND TRADITIONAL COLLEGE STUDENTS

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Discriminant analysis was used to determine whether classifications could be made between students enrolled in e-learning and in face-to-face university courses ($N = 353$) based on their scores from separate instruments measuring sense of community and motivation. Study results provide evidence that the predictors were able to distinguish between the 2 groups. The results reveal that stronger intrinsic motivation of the online group represents the most important predictor in discriminating between online and traditional students. Implications of these results for online instructors are discussed, and recommendations for further research are provided.

INTRODUCTION

Distance learning has increased markedly in recent years. According to the Allen and Seaman (2006), 3.1 million students studied online in the fall of 2005 and it is projected that numbers will continue to increase. The additional number of online learners in 2005 was around 850,000, more than twice the number added in any previous year, and online students represented 17% of the total student population in higher education. This growth rate greatly exceeds the overall growth rate in the

higher education student body and is over ten times that projected by the National Center for Education Statistics for the general postsecondary student population. A growing body of research compares online instruction to face-to-face instruction, much of which reports no significant differences (Saba, 2000). These studies do, however, reveal the complexity of distance education, indicating the many variables involved in the concept. Two important variables that affect distance learning are the sense of community experienced by the students and the degree to which students are

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motivated to learn in an online environment. This study examines these two variables and seeks to identify whether they can be used to classify participants as being either online or face to face students.

LITERATURE REVIEW

Sense of Community

A sense of community is important for all learners, whether they be online or face-to-face students. McMillan and Chavis (1986) define sense of community as “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (p. 9). They identify membership, influence, integration and fulfillment of needs, and shared emotional connection as the most important characteristics of sense of community. In a review of the community literature, Hill (1996) concludes that there is disagreement about the specific dimensions that make up psychological sense of community and suggests this disagreement is because “some significant percentage of these aspects of psychological sense of community differ from setting to setting” (p. 433). One such setting, which is a focus of the present study, is the virtual classroom setting of online and the traditional classroom of face-to-face instructional programs.

McMillan (1996) refined his views based on research that had been reported since he and Chavis (McMillan & Chavis, 1986) published their findings. He moved to a more mutual/personal model of community—one that emphasizes the “spark of friendship that becomes the Spirit of Sense of Community” (p. 315). Royal and Rossi (1997) describe such a community as a learning environment where teamwork is prevalent, diversity is incorporated, and individuals care about, trust, and respect each other. Community members share a vision for the future of the school, a common sense of purpose, and a common set of values. Mem-

bers of strong classroom communities have feelings of belonging and trust; they believe they matter to one another and to the group and that they have duties and obligations to each other and to their school. Community members possess a shared faith that their educational needs will be met interdependently through their commitment to shared goals.

Rovai, Wighting, and Lucking (2004) theorize that sense of community in an educational setting includes two underlying dimensions, which one can label social community and learning community. Social community, derived primarily from the work of McMillan and Chavis (1986) and McMillan (1996), represents the feelings of the community of students regarding their spirit, cohesion, trust, safety, interactivity, interdependence, and sense of belonging. Learning community, on the other hand, consists of the feelings of community members regarding the degree to which they share group norms and values and the extent to which their educational goals and expectations are satisfied by group membership. Learning community, therefore, is closely related to the work of Glynn (1981) and Royal and Rossi (1997), who argue that common goals and values are essential elements of community.

Motivation

Motivation is a second important variable related to all adult learner success and is often cited in the professional distance education literature (e.g., Moore & Kearsley, 2005). Research into characteristics of distance learners report that such students are more likely to have an independent learning style, manifest self-directed behavior, and possess an internal locus of control (Terrell & Dringus, 1999), although findings regarding achievement and persistence in the distance classroom have been inconclusive (e.g., Gibson, 2003). Social cognitive learning theory (e.g., Pintrich & De Groot, 1990) describes motivation as a function of an individual’s thoughts. Social cognitive learning theory identifies six motivational

constructs grouped into three families. The first family refers to an individual's perceptions about his or her ability to accomplish a task and includes constructs such as self-efficacy, locus of control, and attributions. The second family grouping refers to an individual's technique and strategy for tackling a given task. The third group refers to an individual's reasons for engaging in a task and includes goal orientation and intrinsic and extrinsic motivation (and also amotivation). The motivation family addressed in this study is the latter: intrinsic and extrinsic motivation. Many research studies into motivation describe the identification of internal and external sources of motivation (e.g., Miltiadou & Savenye, 2003). Intrinsic motivation stems from factors such as interest and curiosity, describing students' natural tendency to seek out and conquer challenges (Deci & Ryan, 1985). Conversely, extrinsic motivation is frequently in response to an outside stimulus with a desirable outcome, such as financial reward or job promotion. Amotivation develops when students' persistence becomes less likely due to perceptions of incompetence leading to a sense of futility.

A fundamental premise of expectancy value theory is that people engage in specific activities due to the perceived value of likely consequences (Atkinson, 1982). When given the choice between multiple options, expectancy value theory posits that people will select the behavior that they believe will result in the greatest combination of success and value. Consistent with this theory, learning goals are adopted because of the value of anticipated outcomes that will result. According to Bandura (1997), such outcomes can be personal (e.g., pleasure), self-evaluative (i.e., the self-satisfaction from behaving in a manner consistent with self-standards), or social (e.g., respect from others; money). Desired personal and self-evaluative outcomes are related to intrinsic motivation; desired social outcomes are related to extrinsic motivation.

Deci and Ryan (1985) proposed cognitive evaluation theory, which posits that intrinsic

motivation is maximized when individuals feel competent and self-determining in dealing with their environment. They define intrinsic motivation as "the doing of an activity for its inherent satisfactions rather than for some separable consequence" (Ryan & Deci, 2000, p. 56). This definition is in contrast to the meaning of extrinsic motivation, which involves the performance of an activity in order to attain some separable outcome, such as a diploma or license, or to satisfy external needs (e.g., promotion, workplace requirements, praise, family expectations, or financial rewards).

In order to clarify the distinction between intrinsic and extrinsic motivations, Deci (1975) describes salient aspects of rewards, namely that they can be controlling and/or informational. If a teacher gives a reward to a student and the controlling aspect of the reward is considered dominant, then intrinsic motivation decreases, since the learner will perceive the teacher to be externally manipulating his or her performance. If, however, the learner perceives the reward as purely informative, the reward will affect their perception of their own competence. If the information implies ability, intrinsic motivation increases. If it implies a lack of ability, intrinsic motivation declines.

Bandura (1997) provides a compelling argument that perceptions of capability (i.e., self-efficacy) mediate the causal path from outcome expectancies to motivation. Thus, motivation is maximized when an agent expects specific outcomes from an activity, these outcomes are highly valued, and activity is perceived as feasible. In general, a person does not engage in self-perceived futile endeavors regardless of the relationship between a successful performance and resultant outcomes.

The majority of the research on the effects of the learning environment on intrinsic motivation has focused on autonomy (e.g., Ryan & Deci, 2000). Research provides evidence that students whose behavior is mostly internally regulated (or autonomous) have more interest,

confidence, excitement, persistence, better performance, and show a better conceptual understanding of the material than students who are mostly externally controlled (Deci & Ryan, 2000; Grolnick & Ryan, 1987).

A number of classroom-based studies have examined the role of strong teacher-centered environments on autonomy, motivation, and learning (Grolnick & Ryan, 1987; Miserandino, 1996). These studies indicate that strongly controlled environments may reduce a student's sense of autonomy, decrease intrinsic motivation, and result in poorer attitudes and performance in the classroom. In other words, extrinsic motivation via contingent rewards can sometimes conflict with intrinsic motivation. The result is either increased extrinsic motivation, in which activity continues subject to the continuance of external rewards, or a state of amotivation may develop.

Study of the literature shows that the constructs contained within two variables of community and motivation are important in the learning process. This study investigates whether the constructs can be used to make a classification between students enrolled in e-learning and in face-to-face university courses.

METHODOLOGY

Participants

Participants consisted of 320 volunteer students from three universities who were enrolled in either face-to-face courses 165 (51.6%), or online courses, 155 (48.4%). All three universities were located in the same urban area of Virginia and each is fully accredited by the Southern Association of Colleges and Schools. A total of 24 courses was sampled, 12 online and 12 face-to-face courses from the three universities, with each university contributing both online and traditional students. Seventy-eight (24.3%) attended a state university, 101 (31.6%) attended a private Christian university, and 141 (44.1%) attended a private secular university. A total of 209 (65.3%) were classified as undergraduate

and 111 (34.7%) were graduate students. The sample consisted of 272 (85.0%) females and 48 (15.0%) males. The higher percentage of females is consistent with the typical enrollments in education courses. The breakdown by ethnicity was 93 (29.0%) African American, 189 (59.1%) Caucasian, and 38 (11.9%) classified themselves as other. Finally, by age, the sample consisted of 33 (10.3%) 18-20 year olds, 143 (44.7%) 21-30 year olds, 94 (29.4%) 31-40 year olds, 40 (12.5%) 41-50 year olds, and 10 (3.1%) over 50 years old.

Setting

The semester-long courses examined by the present study were conducted on the main university campus in a traditional classroom or delivered at a distance by the Internet using the Blackboard.com e-learning system. This system consists of an integrated set of productivity, communication, assessment, and content management tools that allow instructors to design, present, and facilitate online instruction. Online participants were widely dispersed throughout the United States, although most resided in the eastern part of the country. Students enrolled in traditional courses either lived in dormitories on campus or commuted to campus. All three universities offered both traditional and online courses.

Instrumentation

The present study utilized two self-report instruments, described below, to operationalize research variables. Both instruments, along with demographic questions regarding gender, ethnicity, and age, were administered to all study participants during the final 3 weeks of the semester so that students would have substantial exposure to their respective courses.

The Classroom and School Community Inventory (CSCI) was used to measure classroom community and school community (Rovai et al., 2004). This instrument consists of 10 self-report items for the classroom scale, such as "I trust others in this course," and 10

self-report items for the school community form, such as “I share the educational values of others at this school.” Following each item is a 5-point Likert scale of potential responses: strongly agree, agree, neutral, disagree, and strongly disagree. The total possible scores range from 0 to 40 for each of the classroom community and school community scales, with higher scores reflecting stronger sense of community. Rovai et al. (2004) provide evidence of both CSCI validity and reliability. Internal consistency estimates of reliabilities for the classroom scale and school scale using Cronbach’s coefficient alpha were .84 and .83 respectively. Reliability for the classroom form and school form were 0.84 and 0.83, respectively. Additionally, internal consistency coefficients for the social community and learning community subscales of the classroom form were 0.90 and 0.87, respectively, and for the school form the coefficients were 0.85 and 0.82, respectively. Stability estimates were calculated using Pearson r correlation coefficients and a 2-week interval between pretest and posttest measurements. Stability for each CSCI form was .91. Stability estimates for each scale using Pearson r correlation coefficients and a 2-week interval between pretest and posttest measurements was .91. For the present study the coefficient alpha for classroom community and school community were .84 and .85 respectively.

The 28 item Academic Motivation Scale—College (AMS—C 28) was used to measure intrinsic, extrinsic, and amotivation in college students (Vallerand et al., 1992). Each item is a statement in response to the question “Why do you go to college?” One item is “Because I experience pleasure and satisfaction while learning new things.” Item responses are based on a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*). Twelve of the items measure intrinsic motivation, twelve measure extrinsic motivation, and four measure amotivation. Scales can range as follows: intrinsic and extrinsic motivation, from low of 12 to a high of 84, and amotivation, from a low of 4 to a high of 28.

Higher scores reflect stronger motivation. Vallerand et al. (1992) provide evidence of instrument validity and identify the scale’s internal consistency reliability as 0.86 based on coefficient alpha. In the present study, overall AMS—C 28 reliability was high at .91. The reliability coefficients for the intrinsic motivation, extrinsic motivation, and amotivation subscales were .93, .89, and .91 respectively.

Design and Analysis

The present study employed a correlational design to respond to the following research question: How accurately can online and traditional students be classified into these two categories based on their scores on classroom social community, classroom learning community, school social community, school learning community, intrinsic motivation, extrinsic motivation, and amotivation? Discriminant analysis was employed to analyze the data entering all predictors simultaneously that satisfy tolerance criteria. Specific procedures used are described in the results section below.

RESULTS

A discriminant analysis was conducted in order to determine how accurately seven predictors—classroom social community, classroom learning community, school social community, school learning community, intrinsic motivation, extrinsic motivation, and amotivation—could predict the type of course (online or tradition) in which students were enrolled.

Table 1 displays descriptive statistics disaggregated by type course (online, traditional) as well as summary statistics for pooled data. Table 2 is a correlation matrix showing all seven predictor variables. The overall Wilks’s lambda shown in Table 3 was significant, $\Lambda = .84$, $\chi^2(7, N = 320) = 54.94$, $p < .001$, suggesting that the seven predictors differentiated between the two course types.

TABLE 1
Disaggregated and Pooled Means and Standard Deviations ($N = 320$)

Variable	Type Course				Total	
	Online ($n = 155$)		Traditional ($n = 165$)			
	M	SD	M	SD	M	SD
Community						
Classroom social community	12.73	3.12	14.46	4.09	13.62	3.75
Classroom learning community	14.37	3.15	14.67	3.89	14.53	3.54
School social community	11.77	4.20	12.51	4.06	12.15	4.14
School learning community	14.03	3.84	15.24	3.44	14.65	3.68
Motivation						
Amotivation	6.45	5.45	5.88	3.98	6.15	4.75
Extrinsic motivation	63.17	15.46	61.83	13.96	62.48	14.70
Intrinsic motivation	61.10	14.00	54.02	15.46	57.45	15.17

Note: Scales can range as follows: all community scales, low of 0 to a high of 20; amotivation, low of 4 to a high of 28; extrinsic and intrinsic motivation, low of 12 to a high of 84.

TABLE 2
Correlation Matrix

Variable	1	2	3	4	5	6	7
1. Classroom social community	—	.36	.40	.43	-.20	ns	.11
2. Classroom learning community	—	.17	.39	-.14	ns	.12	
3. School social community	—	.37	ns	.15	.13		
4. School learning community	—	-.19	ns	.22			
5. Amotivation	—	-.20	-.20				
6. Extrinsic motivation	—	.61					
7. Intrinsic motivation	—						

Note: $p < .05$ for all reported correlation coefficients; ns = not significant.

TABLE 3
Wilks's Lambda

	Wilks's Lambda	F	df1	df2	Sig.
Classroom social community	.947	17.966	1	318	.000
Classroom learning community	.998	.544	1	318	.461
School social community	.992	2.577	1	318	.109
School learning community	.973	8.760	1	318	.003
Intrinsic motivation	.945	18.353	1	318	.000
Extrinsic motivation	.998	.667	1	318	.415
Amotivation	.996	1.136	1	318	.287

Table 4 displays within-groups correlations between the predictors and the discriminant functions as well as the standardized weights. Tests of equality of group means show that of the seven predictor variables, only classroom social community, $F(1, 318) = 17.97, p < .001$, school learning community, $F(1, 318) = 8.76, p = .003$, and intrinsic motivation, $F(1, 318) = 18.35, p < .001$, were significant. Moreover, these results reveal that the stronger intrinsic motivation of the online group represents the most important predictor in discriminating between online and traditional students followed closely by classroom social community and then by school learning community. The prediction model was able to classify correctly 69% of the participants in the present study. Cross-validation using the leave-one-out method was also used to estimate how well the classification procedure would predict in a new sample. Using this method a 67% classification accuracy was achieved. In order to take account chance agreement, Cohen's kappa coefficient was calculated. Its value of .40 suggests a moderately accurate prediction. Kappa can range in value from -1 to $+1$, with a positive value of 1 indicating perfect prediction, 0 indicating chance-level prediction, and values less than 0 indicating poorer than chance-level prediction.

DISCUSSION

This study addressed the following research question. How accurately can online and traditional students be classified into the categories

of either online or face-to-face learning based on their scores on classroom social community, classroom learning community, school social community, school learning community, intrinsic motivation, extrinsic motivation, and amotivation? Study results reveal that the stronger intrinsic motivation of the online group represents the most important predictor in discriminating between online and traditional students.

The current findings confirm the results of previous researchers (e.g., Martens, Gulikers, & Bastiaens, 2004; Redding & Rotzien, 2001; Stevens & Switzer, 2006). Martens et al. (2004) study the impact of intrinsic motivation on e-learning in authentic computer tasks that focus on the processes of learning. Martens et al. (2004) report that students with high intrinsic motivation tend to achieve more and explore different things in a given time period and suggest this phenomenon may be related to the increased curiosity that students with high intrinsic motivation demonstrate, thus resulting in proportionally more explorative behavior.

In a comparative analysis of online learning versus classroom learning, Redding and Rotzien (2001) conclude that online instruction can be highly effective. They report a higher level of cognitive learning associated with the online group, and note that higher achievements of the online group can be attributed to the self-selected nature of the students, the instructional design of the online course, and

TABLE 4
Standardized Coefficients and Correlations of Predictor Variables

<i>Predictors</i>	<i>Standardized Coefficients</i>	<i>Correlation Coefficients</i>
Classroom social community	.58	.54
Classroom learning community	-.19	.10
School social community	-.05	.21
School learning community	.45	.38
Amotivation	-.11	-.14
Extrinsic motivation	.45	-.11
Intrinsic motivation	-1.04	-.55

the motivation associated with adult learners. Stevens and Switzer (2006) in a study of comparison between online and traditional courses report that online students have higher levels of interest, curiosity, and intrinsic motivation. Their study suggests that students who register for online courses may prefer autonomy in course design.

In contrast to these studies that report positive attitudes towards online learning, another body of research reports no difference between the two formats. Ali and Elfessi (2004), in a study examining student performance and attitudes towards the use of technology in virtual and conventional settings, found no significant differences in attitudes and performances between the two groups of students. In a study conducted by Johnson, Aragon, Shaik, and Palma-Rivas (2000), the results reveal no differences between an online and a face-to-face course in several measures of student learning outcomes. Benson et al. (2005) report that a group of community college students who enrolled in online courses are as motivated and satisfied as those who enrolled in on-campus courses.

The current study results reveal that the stronger intrinsic motivation of the online group represents the most important predictor in discriminating between online and traditional students. This result may reflect the nature of the learning environment. Zhang (1998) suggests that distance education provides a learning environment that “emphasizes intrinsic motivation and self-sponsored curiosity and creative situated learning” (p. 4). In a study researching attitudinal and situational factors in relation to intrinsic motivation of a group of teacher education students, Rovai et al. (2006) indicate that enrollment in an online course is one of the factors that is related to intrinsic motivation. The less controlling environment of an online course may appeal to intrinsically motivated students.

In addition, learner autonomy might play an important role in fostering online students’ intrinsic motivation. Keegan (1996) states that one of the theoretical foundations of distance

education is independence and autonomy. Distance education has also changed the roles of the participants: students have become active rather than passive learners; faculty have become the guide on the side rather than the sage on the stage (Gumpert & Chun, 1999). Students who take online courses can access instruction anytime and anywhere at their own pace. This mode of learning maximizes students’ freedom and autonomy. Meanwhile, however, students have to take charge of their own learning. Psychologically, they need to possess some domain specific characteristics to facilitate their autonomous learning behaviors. These characteristics include a learner’s personal initiative (Ponton, 1999), resourcefulness (Carr, 1999), and persistence (Derrick, 2001) associated with autonomous learning. Because of the importance of learner autonomy in distance education and the psychological dimension of autonomous learning, it is considered probable that many students who choose online learning are intrinsically motivated.

Alternatively, students who elect to enroll in online courses may have already possessed a strong intrinsic motivation toward learning in general and thus prefer a more autonomous online learning environment. Accordingly this less controlling online learning environment may foster greater intrinsic motivation. The use of technology might be another factor that contributes to the finding of the current study. According to Qureshi et al. (2002), students who take online courses as opposed to face-to-face courses possess a higher degree of proficiency when using technology. This prior mastery experience may further develop a sense of self-efficacy (Bandura, 1986) and thus lead to a positive attitude and higher intrinsic motivation toward online learning.

CONCLUSION AND RECOMMENDATIONS

Mixed results have been presented regarding online learning and traditional learning. Overall, online learning may be as effective as tra-

ditional learning in terms of motivation, attitudes, and achievements. The current study results reveal that intrinsic motivation is an important indicator for online students. However, it is not determined if a greater number of students who possess higher intrinsic motivation elect to study online, or whether online courses promote greater intrinsic motivation. To understand intrinsic motivation in relation to online learning further research is needed to examine students' reasons for enrolling in online learning and also to determine whether motivation differs before and after an online course.

This study and other research reported here shows that many online learners have higher intrinsic motivation. Instructors of online courses may consider this in the curriculum design stage in order to promote their students' intrinsic motivation. Online learners appear to have higher levels of self-efficacy and motivation. Therefore, they are more willing to engage in learning and to tackle more difficult tasks. Consequently online instructors might wish to harness their students' intrinsic motivation through the design of stimulating courses and the assignment of challenging tasks.

Online learning has gained some of its popularity through its immediate access to instruction at any time and anywhere. However, online teaching is not free from criticism. One of the challenges according to Bellon and Oates (2002) is its potential to depersonalize the teacher-student relationship. In contrast, traditional courses have been criticized because they encourage passive learning, and ignore individual needs and higher order thinking skills (Banathy, 1994). Therefore, the optimum learning model might be the hybrid of conventional and online learning, as recommended by Patel and Patel (2006).

Consequently instructors who teach traditional face-to-face courses may wish to create an online component within their courses. The research reported in this study shows that when students feel that they can take charge of their own learning and are able to study in a

less controlling environment their learning autonomy may be maximized. Similarly, instructors who teach purely online may think of creating informal learning centers (e.g., student chat rooms), to meet some individuals' cooperative learning needs.

Although the online students in the current study demonstrated a stronger intrinsic motivation, it remains difficult to separate intrinsic motivation totally from extrinsic motivation. The concepts of intrinsic and extrinsic motivation are not static and absolute. Deci and Ryan (1985) theorize that motivation is a developmental and internalizing process. They describe the process as ascending in order from lowest to highest self-determination of motivation to include external regulation, introjected regulation, and identified regulation. Based on this theory, online instructors should optimize their course design to ensure every opportunity is made available for students to increase their level of motivation and consequently to maximize their learning.

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