

A COMPARATIVE ANALYSIS OF STUDENT ENGAGEMENT, LEARNING, AND SATISFACTION IN LECTURE HALL AND ONLINE LEARNING SETTINGS

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The current study involves a comparison of student levels of engagement, ability to learn autonomously, and interaction with peers and faculty in two different learning settings: a large lecture hall and online. Results suggest that learning mechanism drives the styles of learning and teaching practiced in traditional and online learning settings. Students in the online course were more reflective in their learning practices, spending more time independently preparing for the course, as well as being more involved in class discussions. By comparison, students from the traditional lecture hall reported being more collaborative in their learning with classmates.

INTRODUCTION

The rate of online educational course offerings in universities has skyrocketed in the past ten years. Almost 60 percent of students have taken at least one online course during their college tenures (National Center for Education Statistics, 2003). Despite the increased representation of distance education courses, many concerns remain regarding the quality and

delivery of this learning mechanism. Advocates of distance education argue that there is no reason to assume it is substandard when compared to traditional courses (see Hiltz, 1994; Russell, 1999). In fact, some have suggested online classes have an added advantage over the typical large lecture hall where learning is mostly teacher-centered (Danielson & McGreal, 2000; Edwards, Cordray, & Dorbolo, 2000; Maeroff, 2003). The current study

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is a comparison of student levels of engagement, ability to learn autonomously, and interaction with peers and faculty in different learning settings. By comparing lecture hall and online learning, conclusions can be made as to the ability of students to be engaged, to interact with their peers and faculty, and to learn autonomously in both mechanisms.

LITERATURE REVIEW

Most criticisms voiced about online courses are due to the concern that the interaction between students and faculty is inferior to the traditional classroom setting, making student engagement difficult (Meyer-Peyton, 2000; Purcell-Robertson & Purcell, 2000). Student interactions with faculty and peers are critical to learning and are at the core of any educational situation (Bruffee, 1993; Dede, 1990, 1996; Harasim, Hiltz, Teles, & Turhoff, 1995; Renninger & Shumar, 2002). Further, the strong association between formal and informal faculty-student contact and enhanced student learning has been confirmed (Astin, 1993; Ewell & Jones, 1996; Fries-Britt, 2000; Pascarella & Terenzini, 1991; Tinto, 1993). The more students are involved with the construction and development of their learning, the more they will learn (Astin, 1984; Cross, 1999; Carini, Kuh, & Klein, 2006; Weimer, 2002). In addition, the act of being engaged adds to the "foundation of skills and dispositions that is essential to live a productive and satisfying life after college" (Carini, Kuh, & Klein, 2006, p. 2). Hence, learning outcomes are enhanced when students become both active and purposeful participants in quality educational experiences (Cross, 1999; Little, 1996).

Current literature posits that despite the physical distance between teacher and students, interaction may be achieved, and may even exceed that found in traditional classrooms (Barron, 1987; Hackman & Walker, 1990; Kazmer, 2003). Students' ability to interact is an essential component in building learning communities and engaging active

learners (Schwitzer & Lovell, 1999), leading to personalization, higher self regard, and an opportunity to connect with other students (Maeroff, 2003). Students who perceive high levels of student interaction have reported greater general satisfaction with the course and a higher quality of learning (Schwitzer & Lovell, 1999). Despite these theoretical arguments, few studies exist that explore if student engagement is achieved in distance education.

The ability of students to learn autonomously provides another argument to the debate surrounding online learning. According to Weimer (2002) and Little (1996), autonomous learners can be defined as motivated students who accept more responsibility for their learning and share in the process of learning with other students and faculty. Students develop into autonomous learners through the practice of engagement and a process of student-centered teaching, involving interaction, reflection, analysis, and discussion (Barr & Tagg, 1995; Little, 1996; Weimer, 2002) and has been empirically linked to critical thinking, academic performance, and personal development (Pascarella & Terenzini, 2005). Most studies of autonomous learning have occurred in traditional classroom settings and have not been measured in online learning (Carini, Kuh, & Klein, 2006).

Learning online may have unique barriers to autonomous learning. Students' technological abilities have been shown to influence their predisposition to succeed in online classes (Davis, 1989; Hall & Hall, 1991; Miller, Rainer, & Corely, 2003). Hall and Hall (1991) found that students who were uncomfortable in utilizing the Internet were initially reluctant to participate in class. Student expectations and motivations for taking online classes may also be a barrier to engagement and autonomous learning as the majority of students report a preference for the traditional classroom (Barker, 1987; Barker & Platten, 1988; Creswell, 1986). Poor participation, procrastination, and feelings of isolation are oft-cited findings in online learning (Brown, 2001; Fishman, 1999; Kulick & Kulick, 1991;

Oliver, 1999; Wang & Newlin, 2000). These findings may be due to a disjoint between the expectations students have of online classes and the reality of the learning mechanism (Fulford & Zhang, 1993; Westbrook, 1997).

RESEARCH OBJECTIVES

This study explores the comparative forms of student learning associated with two commonly used learning settings: a large lecture hall and online. By comparing the two, conclusions can be made as to the ability of students to be engaged, to interact with their peers and faculty, and to learn autonomously. Past research has explored the differences between online and traditional learning techniques, but few have assessed student learning with a realistic comparison group, the large lecture hall. The majority of introductory courses in public universities are taught in the large lecture hall modality (Bardwick, 2007) yet most comparison studies utilize small, liberal arts style courses that do not reflect the reality of the student experience. To compare learning outcomes, student gains, and satisfaction in these two distinct learning modalities, the following ideas will be explored:

1. What is the extent to which autonomous learning measures are related to academic performance (grade), student gains (general education, personal and social, practical, and higher order learning skills) and student satisfaction?
2. What are the divergent autonomous learning measures and processes students evoke in the lecture hall versus the online classroom?
3. What affect does the learning mechanism have on student performance, gains, and satisfaction?

METHODS

The basis for comparison will come from several sources. First, a pre- and postsurvey administered online in both classes captured a variety of experimental and academic perfor-

mance measures (see Table 1 for details). Relevant student demographic information and technology comfort levels were also collected to determine if student engagement and subsequent student success were conditional upon these personal characteristics. Pre- and post-surveys were administered in both courses in the first and last week of classes, respectively.

Second, students' classroom discussions were captured via WebCT in the online setting and via digital video recorder in the lecture hall setting. [To confidently make conclusive statements regarding the two settings, measures were taken to maintain comparative quasi-experimental conditions in the online and traditional lecture hall setting.] The questions posed to the large lecture hall session in the fall semester mirrored the questions posed in an asynchronous chat room (recorded by WebCT) for the online course, which was taught by the same professor over the summer session. All videotaped classroom discussion and WebCT discussion logs were transcribed, which enabled the research team to explore the processes by which students form learning communities and interact with faculty and peers. [The researchers IRB requirements were maintained throughout the study. Student participation was voluntary and students who declined participation were not included in the analysis.]

Participants

Two hundred and eighty-three undergraduate students (27 online students and 256 traditional students) enrolled in a Midwestern state university participated in this study. The participants for this study come from two distinct samples of an introductory criminal justice general education course: a 30 student summer course conducted completely online in summer of 2007, and a 300 student traditional lecture hall course completed fall, 2007. In the online course, all 30 students agreed to participate in the study, but three students failed to complete the post survey, leaving an $n = 27$. In the traditional classroom, 32 students declined

participation, 10 students dropped the course during the semester, and 2 students failed to complete the post survey, leaving an $n = 256$. Of the students, 32.3% were male and 67.7% were female. Exploring race, 82.7% of students reported being White, 10.8% African American, 2.5% Hispanic, 1.9% Asian American, and 1.2% reported "other" as their race and ethnicity. Students ranged in age from 17 to 36, with the mean age of 18.84 ($SD = 1.67$).

Students in the online class were an average of 2.5 years older than the traditional students (online $\chi = 21.23$ [$SD = 3.253$], traditional $\chi = 18.57$ [$SD = 1.150$], $t = 4.135$, $p = .000$) and more likely to have had a culminating experience in their field of study (online $\chi = 0.538$ [$SD = 0.508$], traditional $\chi = 0.234$ [$SD = 0.424$], $t = 2.942$, $p = .006$). The rest of the student demographics, including race, gender, first generation college student, community service activities, and study abroad experiences were similar in results for the learning mechanism.

Measures

To go beyond measuring learning simply by student grade, the relationships between academic performance and the following self-reported gains were explored: general education, personal and social development, practical competence, and higher order learning. A set of engagement and self-reported outcome measures were selected from the National Survey of Student Engagement (NSSE) created by Kuh and associates (2001) to assess the extent to which students devote time and energy to educationally purposeful activities (Kuh, 2001, 2003). These measures are clusters made up from a scale of responses and include: student-to-student contact and student-to-faculty interaction. A number of other measures were created that focused on learning and engagement, with particular attention to learning that may occur outside of the traditional classroom, such as independent class preparation time, student discussed course material outside of class, and class participation time. Finally we

analyzed the possible link between learning environment and satisfaction with the course, as well as with their college experience in the institution. Table 1 lists specific survey items that contributed to each scale.

Limitations

The findings of this study should be considered within the context of its limitations. First, the study only uses information collected from one public institution and from two courses offered at the institution. However, the realistic comparison between a large lecture hall and an online learning environment increases the study's validity. Finally, the study utilized asynchronous learning. (For a review of synchronous learning methods, please see Cheung, Hew, & Ling Ng, 2007; Johnson & Buck, 2007; Vess, 2007; Vonderwell, Liang, & Alderman, 2007; Wang & Woo, 2007.)

FINDINGS

To explore to what extent autonomous learning measures are related to academic performance (grade), student gains (general education, personal and social, practical, and higher order learning skills), and student satisfaction, correlation coefficients were run (Table 2). Results suggest that the measures of autonomous learning are highly correlated. Specifically, academic performance in the course is highly correlated to the higher order thinking scale, as well as the gains in personal and social skills. This suggests that course grade may be actually measuring the student's ability to create his or her own code of ethics, develop tolerance for others, and to better analyze complex problems and apply the information into practical solutions. Independent class preparation is positively correlated to student-to-professor contact and discussion of ideas outside of class, suggesting students associated these activities with their independent preparation time. The student gains (general education, personal and social skills, practical

TABLE 1
Descriptive Statistics

<i>Variable Name</i>	<i>Survey Questions</i>	<i>Range</i>	<i>Mean</i>	<i>SD*</i>
Final course grade	Accessed from WebCT database with students permission.	5-1	3.37	1.06
<i>Autonomous Learning Measures</i>				
Independent class preparation	I typically spent ____ hours preparing for class.	20-0	3.66	2.57
Class participation	Frequency asked questions or contributed in class discussion.	5-1	1.73	0.97
Student-to-student contact	How often did you talk to other students in class to prepare for class, discuss topics, or to socialize?	4-1	2.76	1.03
Student-to-faculty contact	Scale of: frequency discussed grades, assignments, career plans, and faculty contact (Cronbach's alpha = .77).	3.5-1	1.71	0.68
Discussed ideas outside of class	Frequency discussed ideas from your readings with others outside of class.	4-1	3.15	0.83
<i>Student Gains</i>				
Gains in general education	Scale of: the extent to which the course contributed to writing and speaking clearly and effectively, acquiring broad general education, and contributed to thinking critically and analytically (Cronbach's alpha = .626).	4-1	2.35	0.71
Gains in personal and social development	Scale of: the extent the course contributed to developing a personal code of ethics, understanding people of other racial and ethnic backgrounds, learning effectively on your own, and with others (Cronbach's alpha = .786).	4-1	2.87	0.72
Gains in practical competency	Scale of: the extent your course experience contributed to acquiring job and work related knowledge and skills, to analyzing quantitative problems, to using computing and information technology (Cronbach's alpha = .694).	4-1	2.23	0.75
Higher order learning	Scale of: the extent the course emphasized analyzing the elements of an idea, experience, or theory, emphasized synthesizing new ideas, information or experiences into new, more complex interpretations and relationships, emphasized making judgments about the value of information, emphasized applying theories to practical problems or new situation.	4-1	2.96	0.76
<i>Student Satisfaction</i>				
Satisfaction with the course	How would you evaluate your course experience?	4-1	3.10	0.72
Quality of relationships with students at the institution	Rate the quality of relationships with other students at your institution.	4-1	2.63	0.93
Quality of relationships with faculty at institution	Rate the quality of relationships with faculty members at your institution.	4-1	2.51	0.91
Overall quality of educational experiences at the institution.	How would you evaluate your entire educational experiences at this institution?	4-1	3.11	0.79

Note: SD = Standard deviation.

TABLE 2
Relationships Between Autonomous Learning Measures,
Academic Performance, Student Gains, and Satisfaction

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1 282										
X2	.056 280	1 280									
X3	-.003 281	.252** 279	1 281								
X4	-.017 280	-.063 278	-.031 280	1 280							
X5	.008 280	.161** 278	.333** 280	.094 279	1 280						
X6	.102 280	.157** 278	.085 280	.315** 279	.094 280	1 280					
X7	-.041 276	.124* 275	.172** 276	.204** 275	.179** 276	.289** 276	1 276				
X8	.133* 278	.129* 277	-.010 278	.160** 277	.146* 278	.369** 278	.454** 276	1 278			
X9	-.018 277	.042 276	-.048 277	.289** 276	.177** 277	.289** 277	.467** 276	.530** 277	1 277		
X10	.175** 275	.049 274	.008 275	.059 272	.085 275	.230** 275	.446** 275	.526** 275	.426** 275	1 275	
X11	.313 276	-.039 275	.014 276	.008 275	.027 276	.358** 276	.318** 276	.459** 276	.301** 276	.371** 275	1 280

Notes: X1 = academic performance (grade), X2 = independent course preparation, X3 = class participation, X4 = student-to-student contact, X5 = student-to-professor contact, X6 = discuss ideas outside of class, X7 = gains in general education, X8 = gains in personal and social skills, X9 = gains in practical competency, X10 = higher order thinking, X11 = Satisfaction with the course.

* $p < .05$. ** $p < .01$.

competency, and higher order thinking) are highly and positively correlated to one another. In addition, the measures of student gains and student satisfaction were all positively correlated and statistically significant. These findings suggest that student satisfaction increased when students felt they had gained greater levels of competency.

By means of t-test, the results revealed significant differences in student responses between the traditional and online course. As shown in Table 3, learning mechanism is significantly related to many learning outcomes, demographics, student gains, and student satisfaction measurements. Specific to learning out-

comes, student grades for the courses were quite similar. By comparison, students in the online course reported three more hours of independent class preparation time (see Table 3) than the traditional students reported. In addition, respondents in the online course reported significantly higher levels of in class participation and more student-to-professor contact than traditional students. These findings may suggest a more reflective style of learning in the online classes due to the nature of communication and course discussions. Confirming an oft cited finding in online learning (Barker, 1987; Barker & Platten, 1988; Creswell, 1986), students in the online course

reported much lower levels of interactions with their classmates compared to the traditional students. Further, students in the online course reported discussing ideas outside of class at lower levels than the traditional students.

Students were also asked to report on a series of questions designed to capture what they believed they gained in the courses they took. There were no significant differences in the reported levels of gains in general education (i.e., writing, speaking, thinking critically) or gains in personal and social skills (i.e., defining a code of values, understanding yourself and others, learning effectively independently and collaboratively). By comparison, traditional students reported slightly higher gains in practical skills (i.e., analyzing problems, using computers, working effectively with others) and higher order thinking (i.e., analyzing theory, organizing ideas, making value judgments, the application of theory to new ideas) than the online respondents (see Table 3).

Online respondents rated their course experience as less positive than the traditional respondents (online $\chi = 2.76$ ($SD = 0.723$), traditional $\chi = 3.14$ ($SD = 0.714$), $t = -2.505$, $p = .013$). To measure the students overall experiences at the institution, students were asked to rate their relationships with faculty and students at the institution, as well as the overall quality of their educational experiences at the institution. Online respondents reported few differences in their interactions with faculty and their overall educational experiences, but did rate their quality of interactions with students at the institution as much lower than the traditional students (online $\chi = 1.69$ ($SD = 0.788$), traditional $\chi = 2.73$ ($SD = 0.886$, $t = -5.749$, $p = .000$). These findings confirm concerns that student isolation may be a byproduct of online learning (Meyer-Peyton, 2000; Purcell-Robertson & Purcell, 2000).

DISCUSSION AND CONCLUSION

Learning environment drives the styles of learning and teaching practiced in higher education. The use of the Internet for as a medium

elicits epistemological changes for both learner and teacher. Namely, online learning is achieved by means of greater student-to-faculty contact, participation in class discussions, and a more reflective learning style.

Students in the online course may be more reflective in their learning process, indicated by the findings that online students spent more time preparing for the course and that they felt more connected to faculty. Simply put, writing demands more reflection than speaking (Harasim, 1990; Rohfeld & Hiemstra, 1995). The asynchronous nature of the online course allows the student (and the professor) a more thoughtful process of communication.

Findings in this study regarding communication in online learning muddied the proverbial waters regarding the debate of the role of interaction in learning. Despite attempts to encourage student-to-student interactions through asynchronous discussion, online students reported fewer student-to-student interactions. This finding is puzzling considering students in the online course reported greater levels of classroom participation. One likely explanation is that while online students consider their discussion sessions as classroom participation, traditional students see them as interactions. Due to the social and emotional distance associated with the online discussions, students must not only express their ideas online, but their identities as well (Haythornthwaite & Bregman, 2004). A result of the presentation of self is that personal disclosures build stronger interpersonal ties amongst participants, which generally increases satisfaction with group activities (Haythornthwaite & Bregman, 2004). These findings may also help explain the lower levels of satisfaction reported by the online learners.

As the system evolves, a major pedagogical concern emerging is how to maintain interaction when students and teachers are separated by distance, but linked by technology. Creating intentional interaction is essential to student learning. Future practices must encourage students to present their personal identities in collaboration with other students, in addition

TABLE 3
Bivariate Statistics: Differences Between Autonomous Learning Measures,
Student Satisfaction, Gains, and Demographics in the Online and Traditional Classroom

	<i>Online</i> (<i>n</i> = 27)		<i>Traditional Class</i> (<i>n</i> = 256)		<i>t</i> statistic	<i>p</i> value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Final course grade	2.54	1.07	2.64	1.06	-0.48	.63
<i>Autonomous Learning Measures</i>						
Independent class preparation	6.58	4.20	3.37	2.14	3.85	.00**
In-class participation	2.88	1.24	1.61	0.86	5.113	.00**
Student-to-student contact	1.48	.714	2.89	0.97	-7.10	.00**
Student-to-faculty contact	2.03	0.57	1.68	0.67	2.60	.01*
Discussed ideas outside of class	2.81	0.93	3.18	0.80	-2.02	.02*
<i>Student Gains</i>						
Gains in general education	2.22	0.68	2.36	0.87	-0.76	.41
Gains in personal	2.62	0.62	2.89	0.726	-1.82	.06
Gains in practical	1.93	0.49	2.26	0.76	-3.00	.00**
Higher order thinking	2.60	0.87	3.00	0.74	-2.53	.01*
<i>Student Satisfaction</i>						
Quality of relationships with students at institution	1.69	0.78	2.73	0.88	-5.74	.00**
Quality of relationships with faculty at institution	2.58	0.85	2.51	0.91	0.38	.70
Overall quality of educational experiences at institution	3.00	0.74	3.12	0.79	-0.76	.44
Rated Course Experience	2.76	0.72	3.14	0.71	-2.50	.01*
<i>Student Demographics</i>						
Race	3.11	0.95	2.98	0.53	.69	.49
Age	21.23	3.25	18.57	1.15	4.13	.00**
Gender	0.61	0.49	0.68	0.46	-0.72	.47
First generation	0.76	0.42	0.69	0.46	.75	.45
Culminating Experience	0.53	0.50	0.23	0.42	2.94	.00**
Community service	0.96	0.19	0.79	0.40	1.61	.11
Study abroad	0.07	0.27	0.04	0.20	.79	.43

Note: **p* < .05. ***p* < .01.

to discussing course materials. As technology advances, students' collaboration may be improved in a variety of ways to allow participants to gather in a shared space. Synchronous chat sessions and virtual worlds such as, *Second Life*, are becoming increasingly main-

stream. By means of these technologies, the social and emotional distances between participants are lessened as students share in a co-presence or sense of community.

Online learning may be beneficial to students who would not typically participate in

the traditional lecture hall discussion. Current research argues that students who are more reflective in the online medium may actually be more introverted in the traditional classroom (Downing & Chim, 2004). Because reflective learning practices are integral in shaping autonomous learning, online students may be encouraged toward more autonomous learning practices, simply by the greater reliance on student independence and responsibility for their own learning experiences. Perhaps in the future, e-learning strategy designs for different learning styles may be enhanced by providing educational technology creators with the information from the widest possible range of teaching techniques (Wang, Wang, Wang, & Huang, 2006). For example, research suggests introverted students do well in online learning environments (Pratt, 1996). By capturing student learning styles, course instructor and designer can attempt to integrate online tools to meet the wide spectrum of needs the online students may display.

Modern college students are the products of an educational system that has historically placed the responsibility for learning on the instructor (Jacob & Eleser, 1997). This pedagogy relies on the authoritative expertise of the instructor, who provides knowledge and information to passive vessels by means of lecture and audiovisual aids. Consequences including unmotivated and passive students, irregular class attendance, learned helplessness, and an ultimate focus on grades rather than learning are the unintended consequences of the model (Beane, 1997; Stevens, 2000). By comparison, the role of the professor in distance education is more of a moderator rather than an owner and deliverer of knowledge (Beaudin, 1999; Hiltz, 1994; Kearsley, 2008). Discussed informally as the "guide by the side" rather than the "sage on the stage," this practice allows the students to have ownership over their learning process, encouraging active learning (Hardin, 2004).

The "guide by the side," model does present some potential problems for students and faculty. The lack of face-to-face persona seems to

divest the professor of some authority, which may be uncomfortable to professors who see their role as an authoritarian. In addition, students may be uneasy about taking ownership for their learning process. Studies that have evaluated students' perceptions of their ability to learning autonomously have found that anxiety, frustration, confusion, and anger are common feelings for students in the beginning stages of autonomous learning (Taylor & Burgess, 1995; Lunyk-Child et al., 2001; Hewitt-Taylor, 2001). Institutions and faculty may consider preparing students for their online course experiences with an aptitude test that would define student ability as well as preferred learning style. Fisher and colleagues (2001) have created a "readiness scale" which assesses students' abilities to move toward autonomous learning. By empowering students to assess their abilities, it provides the students and faculty member with realistic expectations regarding their experiences, as well as inundating students with the possible benefits of autonomous learning. Future research may explore the impact of these new technologies and tools on student engagement, collaboration and, most importantly, learning.

In conclusion, this study suggests that learning mechanism profoundly affects student learning, driving the styles of interaction amongst students and between students and faculty, and the methods of learning utilized by students. Because learning mechanism plays a critical role in students' learning experiences, future research needs to continue to explore how the online and traditional lecture hall settings manifest autonomous learning practices.

REFERENCES

- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25, 297-808.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.
- Bardwick, D.W. (2006, December 6). Does class size matter? *Inside Higher Ed*. Retrieved April 9,

- 2008, from <http://www.insidehighered.com/views/2007/12/06/barwick>
- Barker, B. O. (1987, April). *The effects of learning by satellite on rural schools*. Paper presented at the Learning by Satellite Conference, Tulsa, OK.
- Barker, B., & Platten, M. (1988). Student perceptions on the effectiveness of college credit courses taught via satellite. *The American Journal of Distance Education*, 2(2), 44-50.
- Barr, R. B., & Tagg, J. (1995, November/December). From teaching to learning—A new paradigm for undergraduate education. *Change*, 27(6), 13-25.
- Barron, A. R. (1987). Are Bayes rules consistent in information? In T. M. Cover & B. Gopinath (Eds.), *Open problems in communication and computation* (pp. 85-91). New York: Springer-Verlag.
- Beane, J. A. (1997). *Curriculum integration: Designing the core of democratic education*. New York: Teachers College Press.
- Beaudin, B. (1999). Keeping online asynchronous discussion on topic. *Journal of Asynchronous Learning Networks*, 3(2), 41-53.
- Brown, R. E. (2001). The process of community-building in distance learning courses. *Journal of Asynchronous Learning Networks* 5(2), 18-35.
- Bruffee, K. A. (1993). *Collaborative learning: Higher education, interdependence, and the authority of knowledge*. Baltimore: The Johns Hopkins University Press.
- Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1), 1-32.
- Creswell, J. W. (1986). *Measuring faculty research performance: New directions for institutional research: No. 50*. San Francisco: Jossey-Bass.
- Cross, K. P. (1999). Assessment to improve college instruction. In S. J. Messick (Ed.), *Assessment in higher education: Issues of access, quality, student development, and public policy* (pp. 35-46). Mahwah, NJ: Erlbaum.
- Danielson, C., & McGreal, T. (2000). *Teacher evaluation to enhance professional practice*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13, 319-340.
- Dede, C. (1990). The evolution of distance learning: Technology-mediated interactive learning. *Journal of Research on Computing in Education*, 22(3), 247-264.
- Dede, C. (1996). Emerging technologies in distance education for business. *Journal of Education for Business*, 71(4), 197-204.
- Downing, K., & Chim, T. M. (2004). Reflectors as online extraverts? *Educational Studies*, 30(3), 265-76.
- Edwards, M. E., Cordray, S., & Dorbolo, J. (2000). Unintended benefits of distance-education technology for traditional classroom teaching. *Teaching Sociology*, 28(4), 386-391.
- Ewell, P. T., & Jones, D. P. (1996). *Indicators of "good practice" in undergraduate education: A handbook for development and implementation*. Boulder, CO: National Center for Higher Education Management Systems.
- Fisher, M., King, J., & Taguc, G. (2001). Development of a self-directed learning readiness scale for nursing education. *Nurse Education Today*, 21(7), 516-525.
- Fishman, B. J. (1999). Characteristics of students related to computer-mediated communications activity. *Journal of Research on Computing in Education*, 32(1), 73-97.
- Fries-Britt, S. L. (2000). Identity development of high-ability Black collegians. In M. B. Baxter Magolda (Ed.), *Teaching to promote intellectual and personal maturity: Incorporating students' worldviews and identities into the learning process: New directions for teaching and learning: No. 82* (pp. 55-65). San Francisco: Jossey-Bass.
- Fulford, C. P., & Zhang, S. (1993). Perceptions of interaction: The critical predictor in distance education. *American Journal of Distance Education*, 7(3), 8-21.
- Hackman, M. Z., & Walker, K. B. (1990). Instructional communication in the televised classroom: The effects of system design and teacher immediacy on student learning and satisfaction. *Communication Education*, 39, 196-206.
- Hall, S., & Hall, P. (1991, April). *Between schools: Inter-classroom collaboration*. Paper presented at the annual conference on computers and English, Old Westbury, NY.
- Harasim, L. M. (1990). Online education: An environment for collaboration and intellectual amplification. In L. M. Harasim (Ed.), *Online education: Perspectives on a new environment* (pp. 39-64). New York: Praeger.
- Harasim, L. M., Hiltz, S. R., Teles, L., & Turnoff, M. (1995). *Learning networks: A field guide to*

- teaching and learning online. Cambridge, MA: MIT Press.
- Hardin, K. (2004). Teach them to fly: Strategies for encouraging active online learning. *Turkish Online Journal of Distance Education*, 5(2), 10-14.
- Haythornthwaite, C. & Bregman, A. (2004). Affordances of persistent conversation: Promoting communities that work. In C. Haythornthwaite & M. M. Kazmer (Eds.), *Learning, culture and community in online education: Research and practice* (pp. 145-162). New York: Peter Lang.
- Hewitt-Taylor, J. (2001). Self-directed learning: views of teachers and students. *Journal of Advanced Nursing* 36, 496-504.
- Hiltz, S. R. (1994). *The virtual classroom: Learning without limits via computer networks*. Norwood, NJ: Ablex.
- Jacob, S., & Eleser, C. (1997). Learner responsibility through "presence." *The College Student Journal*, 31(4), 460-466.
- Kazmer, M. M. (2003, September). *Online learning and community embeddedness: How existing ties transform the growth of relationships between educational and community settings*. Paper presented at the Information, Communication, and Society/Oxford Internet Institute Symposium, Oxford, UK.
- Kearsley, G. (1994-2008). *Minimalism (J. Carroll)*. Retrieved April 15, 2008, from the Theory into Practice Database Web site: <http://tip.psychology.org/>
- Kuh, G. D. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change*, 33(3), 10-17, 66.
- Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change*, 35(2), 24-32.
- Kulick, C. C., & Kulick, J. (1991). Effectiveness of computer-based instruction: An updated analysis. *Computers and Human Behavior*, 7, 75-94.
- Little, D. (1996). Freedom to learn and compulsion to interact: Promoting learner autonomy through the use of information systems and information technologies. In R. Pemberton, E. S. L. Li, W. W. F. Or, & H. D. Pierson (Eds.), *Taking control: Autonomy in language learning* (pp. 203-218). Hong Kong: Hong Kong University Press.
- Lunyk-Child, O.I., Crooks, D., Ellis, P., Ofosu, C., O'Mara, K., & Rideout, E. (2001). Self-directed learning: Faculty and student perceptions. *Journal of Nursing Education*, 40(3), 1-8.
- Maeroff, G. (2003). *A classroom of one: How online education is changing our schools and colleges*. New York: Palgrave Macmillan.
- Meyer-Peyton, L. (2000). Elements of a successful distributed learning program. In L. Lau (Ed.), *Distance learning technologies: Issues, trends and opportunities* (pp. 82-90). Hershey, PA: Idea Group.
- Miller, M., Rainer, R. K., & Corley, J. K. (2003). Predictors of engagement and participation in an on-line Course. *Online Journal of Distance Learning Administration*, 6(1).
- National Center for Education Statistics (2003, September 9). *National Assessment of Educational Progress (NAEP) questions*. Retrieved March 25, 2008, from <http://nces.ed.gov/nationsreportcard/itmrl/>
- Oliver, R. (1999). Exploring strategies for online teaching and learning. *Distance Education*, 20(2), 240-254.
- Pascarella, E., & Terenzini, P. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.
- Pascarella, E.T. and Terenzini, P.T. (2005). *How college affects students (Vol 2): A third decade of research*. San Francisco: Jossey-Bass.
- Pratt, K. (1996). *The electronic personality*. Unpublished doctoral dissertation. Santa Barbara, CA: The Fielding Institute.
- Purcell-Robertson, R. M., & Purcell, D. F. (2000). Interactive distance learning. In L. Lau (Ed.), *Distance learning technologies: Issues, trends and opportunities* (pp. 16-21). Hershey, PA: Idea Group.
- Renninger, K. A., & Shumar, W. (Eds.). (2002). *Building virtual communities: Learning and change in cyberspace*. New York: Cambridge University Press.
- Rohfeld, R. W., & Hiemstra, R. (1995). Moderating discussions in the electronic classroom. In Z. L. Berge & M. P. Collins (Eds.), *Computer-mediated communication and the online classroom: Vol. III, distance learning* (pp. 91-140). Cresskill, NJ: Hampton Press.
- Russell, T. L. (1999). *The no significant difference phenomenon: A comparative research annotated bibliography on technology for distance education*. Raleigh, NC: Office of Instructional Telecommunications, North Carolina State University.
- Schwitzer, A. M., & Lovell, C. (1999). Effects of goal instability, peer affiliation, and teacher sup-

- port on distance learners. *Journal of College Student Development* 40(1), 43-53.
- Stevens, V. (2000, May 3-4). "Developing a community in online language learning". *Proceedings of the Military Language Institute's Teacher-to-Teacher Conference: Tools of the Trade*. Abu Dhabi, UAE. http://www.geocities.com/vance_stevens/papers/webheads/t2t2000.htm
- Taylor, I., & Burgess, H. (1995). Orientation to self-directed learning: Paradox or paradigm? *Studies in Higher Education*, 20, 87-98.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.
- Wang, A., & Newlin, M. (2000). Characteristics of students who enroll and succeed in psychology Web-based classes. *Journal of Educational Psychology*, 92(1), 137-143.
- Wang, K. H., Wang, T. H., Wang, W. L., & Huang, S. C. (2006). Learning styles and formative assessment strategy: Enhancing student achievement in Web-based learning. *Journal of Computer Assisted Learning*, 22(3), 207-217.
- Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco: Jossey-Bass.
- Westbrook, T. S. (1997). Changes in students' attitudes toward graduate business instruction via interactive television. *The American Journal of Distance Education*, 11(1), 55-69.

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