World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:1, No:11, 2007

The Effects of the Impact of Instructional Immediacy on Cognition and Learning in Online Classes

Glenda A. Gunter

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

***Abstract*—**Current research has explored the impact of instructional immediacy, defined as those behaviors that help build close relationships or feelings of closeness, both on cognition and motivation in the traditional classroom and online classroom; however, online courses continue to suffer from higher dropout rates. Based on Albert Bandura's Social Cognitive Theory, four primary relationships or interactions in an online course will be explored in light of how they can provide immediacy thereby reducing student attrition and improving cognitive learning. The four relationships are teacher-student, student-student, and student-content, and student-computer. Results of a study conducted with inservice teachers completing a 14-week online professional development technology course will be examined to demonstrate immediacy strategies that improve cognitive learning and reduce student attrition. Results of the study reveal that students can be motivated through various interactions and instructional immediacy behaviors which lead to higher completion rates, improved self-efficacy, and cognitive learning.

***Keywords*—**Distance Learning, Self-Efficacy, Instructional immediacy, Student achievement.

I. Introduction

MANY institutions of higher learning are looking to implement many of the improvements in its educational offerings that industry, business, armed services, and others are already employing. Educators are hoping to receive guidance in this move to educate students along any path, at any time, and in any place. In other words, more and more students are being taught utilizing a different medium through the use of distance education and, as a result, instructional strategies are going to have to change and undergo major transformations.

Due to the increasingly diverse population, education is changing toward a more global, technology-rich environment designed to meet these diverse and changing needs of students. The creation of easy to use graphical browsers and new Web 2.0 technologies has dramatically increased the popularity of the Internet and the World Wide Web (WWW). The Internet has shifted from being a communication mode of text-only to a powerful two-way multimedia communication system with applications that have the potential to revolutionizing teaching and training. This technological phenomenon has directly impacted and is transforming the way we teach and the way students learn [1] and these have brought the WWW to the forefront of instructional strategies for all educators. The World Wide Web removes all obstacles of time, place, and physical limitations and opens more training opportunities for teachers.

With all change comes barriers, student achievement and retention in online courses has historically been lower than traditional face-to-face courses [2]. Retention and achievement continue to be a problem in online courses with high school and college freshman typically incurring the highest dropout rates [3]. Researchers have reported non-completion rates in online classes ranging from 30% to as high as 50% [4]. The most cited reasons for student dissatisfaction with online courses and high attrition is a lack of social presence, defined as a feeling of closeness and community [5], feelings of isolation, and lack of interaction with the instructor and other students [6].

Yet with all these apparent objections, online course offerings continue to grow. Allen and Seaman [7] reported an annual growth in online course offerings of more than 18% per year. The University of Central Florida (UCF) is a good example of this growth. In the 1996-1997 school year, UCF offered only 34 online courses. In the 2005-2006 school year, UCF offered more than 1,400 online courses [8]. It is clear online course offerings will continue to grow. Therefore, it is imperative that educators, instructional designers, and faculty understand and employ strategies that aid in creating effective online courses that engage, motivate, and increase student retention and cognitive learning.

While there has been a great deal of research over the past 20 years that has attempted to assess the effectiveness of online courses [9], most of the research has focused on comparing traditional to online classrooms; not on the strategies that online instructors, faculty, and instructional designers can employ to better facilitate the online experiences and how to improve student satisfaction and achievement.

The purpose of this research study is to identify specific instructional immediacy behaviors that positively impact student retention, motivation, and cognitive learning in an

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

online class. For the purpose of this study, immediacy behaviors are defined as those behaviors that help build close relationships or feelings of closeness. Four types of interaction in an online course will be examined for immediacy behaviors: teacher-student, student-student, student-content, and student-technology. Constructs of Bandura's [10] Social Cognitive Theory will be used to examine and determine online immediacy behaviors that are delivered asynchronously via the instructor, student, content, and the technology. Specifically, immediacy behaviors that bring social and status incentives to students will be examined. Social incentives, as defined by Bandura's Social Cognitive Theory, will be demonstrated by words of approval, providing positive specific feedback, calling students by name, using emoticons in text correspondence [10]. These immediacy behaviors will be examined in each of the four types of interaction mentioned previously. Also, those immediacy interactions that increase students' self-efficacy, intrinsic and extrinsic motivation will be examined. This research study also will look at the impact of immediacy behaviors on student motivation using Keller's ARCS Model [11]. Finally, retention rates and grades will be examined to determine the impact of immediacy behaviors on cognitive learning and retention.

There has also been a good deal of research on the importance of social interactions in the online classroom, including the impact of teacher immediacy behaviors, however, there is not a great deal of research that examines specific instructional immediacy behaviors and strategies in online courses and how they impact student achievement and motivation. The purpose of this research project is to further explore how these concepts impact student learning in the online classroom. Based on Albert Bandura's Social Cognitive Theory [10], relationships or interactions in an online course will be explored in light of how they can provide immediacy, engage, motivate, and improve the cognitive learning of students enrolled in an online course. By examining the impact of specific types of instructional immediacy behaviors, it may be possible to identify specific strategies that faculty and instructors can implement to improve retention and cognitive learning for students in online courses.

II. REVIEW OF LITERATURE

Much research has explored the impact of teacher immediacy behaviors on student motivation for learning in the traditional classroom [12] [13]. In the traditional classroom, teacher immediacy behaviors generally refer to verbal and non-verbal behaviors directed to students that reinforce a feeling of closeness including behaviors such as eye contact, nodding, calling students by name, and sharing personal stories [13]. Hutchinson observed that most of the research on instructional immediacy has occurred in the area of instructional communication. Due to the changes in the instructional vehicle, more studies are beginning to examine instructional immediacy as it related to online learning.

The term 'immediacy' in online courses appears to be somewhat of a contradiction in terms because of the lack of physical presence and the delay in responding since the nature of most online courses centers on asynchronous interaction [13]. Social Cognitive Theory can be used as a framework to examine immediacy behaviors in the online classroom [10]. Within this theory, immediacy behaviors that provide social and status incentives can be implemented [13] that positively impact student motivation, cognitive learning, and satisfaction [15]. Furthermore, immediacy behaviors can improve students' self-efficacy as they master content and experience success in the online class.

Historically, due to online courses having a higher dropout rates than traditional face to face courses [4] [3]. Research has shown that instructors can enhance student satisfaction and achievement in online courses by creating a sense of community. Students report that a sense of community or connectedness is a major factor in increasing their satisfaction in online courses [5]. Specifically, through instructional immediacy behaviors and student-to-student interactions there are many ways instructors can build a sense of community. The three primary relationships or interactions in an online course that can build that sense of community and connectedness are teacher-student, student-student, and student-content. Researchers examined a new type of interaction that may contribute to connectedness as well, that of the interaction between the student and the computer [13]. Based on Bandura's Social Cognitive Theory, LaRose and Whitten examined immediacy behaviors in light of the social status they provided to students [10] [13]. They found that in online courses immediacy behaviors motivate learning by providing social and status incentives. When looking at computer immediacy, LaRose and Whitten [13] examined the qualities of computer interactions that lead to feelings of closeness. They noted how computers tend to have a holding power on the user which they attribute to computer immediacy. They also observed how the computer itself can provide social status because today's digital students recognize and use the computer as a social networking tool as well as a productivity tool [13].

LaRose and Whitten [13] posited that instructional immediacy can be provided vicariously to students in an online course when instructors interact through discussion boards which are supported by Bandura's (1986) Social Cognitive Theory [10]. In an online course, students can observe how an instructor reacts to another student's posting, see the type of written feedback provided, and experience vicarious immediacy. This too can improve motivation as students' experience vicariously rewarding student-teacher interactions which enhance cognitive learning [13].

Theory supports the importance of immediacy behaviors, which states that online students depend more on validation from interaction with their professors because of the lack of face-to-face interaction [10]. Online interactions between the student and the instructor, whether synchronous or asynchronous, can increase a student's self-efficacy. Increased

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

self-efficacy positively affects motivation because it improves a student's belief in their ability to be successful in completing a specific task. As Keller's noted in his ARCS Model of Motivation, motivation is necessary for successful learning [11]. Keller and Suzuki [16] examined the importance of motivation in an online learning environment and applied the ARCS Model and found that helping create a learning environment that fosters intrinsic motivation and increased student confidence (self-efficacy).

Research conducted also points to the importance of teacher immediacy and its impact on cognition [17]. These researchers propose a framework that integrates cognitive presence, social presence (teacher immediacy behaviors), and teaching presence within learning community made up of participants and the instructor. They suggest that having a social presence facilitates successful mastery of cognitive learning objectives, especially when there is an affective dimension or goal in addition to cognitive goals, such as personal enjoyment or fulfillment which leads to learners remaining in the learning community.

Aragon [18] found that teacher immediacy behaviors could help students feel more connected, and in turn, impact students' cognitive learning. Aragon goes so far as to state that social presence, as demonstrated through immediacy behaviors, is one of the most effective strategies for improving an instructor's effectiveness as well as buildings a strong sense of community in an online course. Rourke, Anderson, Garrison, and Archer [19] noted that one of the benefits of social presence in an online course is its ability to initiate, maintain, and support cognitive and affective learning objectives by creating group interactions that are appealing and intrinsically motivating.

While social presence commonly has a positive influence on student satisfaction, recent studies are suggesting a strong correlation toward improved learning outcomes as well [19]. According to Keller's motivational model applied to online learning [16], these types of interactions keep learners more engaged thereby supporting their cognitive learning. These interactions also increase student satisfaction and motivation in an online course which leads to improved learning [19].

Woods and Ebersole [20] also observed the importance of building connectedness in an online classroom through immediacy behaviors. Their research focused on the interaction between faculty and graduate students and the impact of the sense of connectedness and immediacy behaviors on student satisfaction. Woods and Ebersole studied the use of non-subject-matter-specific discussion folders in the class discussion board to build social presence and provide vicarious immediacy to students. Students in their study reported feeling more connected to other students, more satisfied with the overall learning experience, and experienced their instructors as caring and highly involved in the course. Woods and Ebersole (2003) noted that other studies have shown a positive correlation between instructor immediacy behaviors and cognitive learning. This is in concert with findings of Ryan and Deci (2000).

Ryan and Deci [21] report a relationship between an individual's need for competence (self-efficacy), autonomy, and relatedness and intrinsic motivation. In the online classroom, this can be created through immediacy behaviors. Ryan and Deci also found that online courses structured to allow greater autonomy can encourage greater intrinsic motivation in students which can lead to increased self-efficacy. Teacher-student interactions can create positive relationships with students. Ryan and Deci surmised that a secure relational base appears to be important to foster intrinsic motivation in students. Again, tying this back to Social Cognitive Theory, intrinsic motivation is important for the development of self-efficacy and self-regulatory behaviors which leads to greater cognitive learning [10].

As Ryan and Deci [21] observed, course structure impacts student achievement and satisfaction. Pipes and Wilson's [22] findings also support this notion. They detected that undergraduate student attitudes (i.e. satisfaction and motivation) towards the way online courses are structured can positively or negatively affect attrition. If students are less satisfied and less motivated, they are more likely to drop a course or fail to complete. This negatively impacts student learning. Northrup's [23] study examined graduate students' online learning preferences for interaction and participants indicated it was important for online instructors to promote collaboration and dialogue. Northrup found that these types of interactive activities both enhance learner motivation and lead to higher academic achievement.

A study conducted by Krentler and Willis-Flurry [24] also found that online collaboration and dialogue increased undergraduate students' cognitive learning. These researchers examined the use of discussion boards for collaboration and dialogue and found a correlation between student participation in online class discussion and achievement. Undergraduate students in their study that participated in online class discussions more than seventy five percent of the time "earned a significantly higher course grade point average (GPA=2.69) than all other students." [24]. Researchers reported the mean course grade point average was 2.49.

Collaborative projects can also create a sense of connectedness and community in online courses [25]. Rovai examined seven factors that he hypothesized would create a positive sense of community in online courses. Two of the seven include social presence and small group activities. Rovai stressed that social presence must be overt and intentional on the part of the instructors because of diminished visual cues. Therefore, instructors must implement strategies to enhance social presence.

Clearly, many factors impact student satisfaction, motivation, and cognitive learning in an online course. Strategies such as instructional immediacy and building a

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

sense of connectedness and community can have a positive impact on student satisfaction, motivation, and achievement [18][10][17][24][12][19][5][6][21]. These strategies are supported by learning theories such as Bandura's [10] Social Cognitive Theory, constructivism, Vygotsky's Social Development Theory, and motivational models, including Keller's ARCS Model of motivation. These theories consistently relate the importance of social interaction factors such as autonomy and self-efficacy. The literature suggests that instructors and course designers who incorporate into their online learning environments strategies that facilitates and provides students with a sense of community, autonomy, and instructional immediacy, may positively impact cognitive learning [18].

III. Method

A. Participants and Setting

Forty-three inservice public school teachers from a school district in the Southeastern United States participated in a fourteen-week online professional development course. The course was 100% online, instructor led, text-based with video enhancement and weekly assignments. The course was developed by a private education company and marketed to school districts as an online professional development solution. Because this course traditionally had a high completion rate, this researcher decided to examine how the course was designed to incorporate immediacy behaviors to achieve these goals. The school district implementing this course had successfully used it previously to train inservice teachers. The course focused on learning how to effectively integrate technology in the classroom curriculum to better reach and teach today's digital kids and improve their learning. Participation in the study 1) voluntarily signed up for the course to earn professional development credit, 2) had to have Internet access, an active e-mail account, and access to a computer, and 3) had to attend one initial face to face orientation meeting. Over a period of 14 weeks, participants worked directly with their instructor individually. The course did not include any discussion or formal student-student interaction.

The participants were divided into classes of between ten and fifteen students and were assigned to an instructor who had both classroom and online teaching experience. All instructors were female and possessed a Master's in Educational Technology and were currently employed in a K-12 school district. The three instructors included a classroom teacher, a technology specialist, and a school district professional development staff member. All three had previously taught this course and were experienced in educational technology integration. Their years of teaching ranged from 15 years to 28 years.

To begin of the course, instructors sent out a class e-mail introducing themselves and provided appropriate personal and professional information. Students replied to everyone on the e-mail and introduced themselves to their classmates. This was the one time students were allowed to correspond with each other. Because this is a professional development site-based model, many participants worked together on as daily basis, so the student to student interaction was not seen as a crucial component of this course.

After the initial introductory e-mail, students began working through the course content. Each week, participants read the online course content, a chapter in the course textbook, and selected to visit Web sites specific to their interests and curriculum areas. These Web resources were provided in the course content and at the textbook Web sites. Participants then reflected on their readings and Web site selections, and then completed an application assignment that asked them to apply the concepts relevant to their specific classroom situation. Alternative instructions were provided for those who did not have access to a group of students.

Participants were also able to access and view video interviews of classroom teachers discussing how they applied specific technology integration strategies presented throughout the course. Participants were not required to view these videos. Other video enhancements were made available through the availability of multiple multimedia tutorials and a tutorial demonstrating how to use the textbook Web site.

Participants completed weekly assignments including four key projects in the course. The four key projects where a classroom Web page (in Week 5), a PowerPoint reflection on the readings (Week 8), a curriculum page that supports a lesson and provides Web resources for student use (Week 11), and the final integration project (due in Week 14). The final project included an entire integration unit with multiple technology components. Participants create a meStory™, which also teaches state standards and meets a specific curriculum-learning objective.

Participants submitted all assignments via e-mail. Reflections were to be included in the body of an e-mail message and projects were submitted as attachments. Instructors provide specific feedback and grades on assignments within 24-48 hours. The role of the instructor in this course was one of mentor and guide. Because the content was all presented online and through a textbook, instructors did not have access to alter the course content.

B. Analysis

At the beginning of the course, participants were asked to complete an online Pretest survey that consisted of 35 questions matched to the National Educational Technology Standards for Teachers (NETS-T) developed by ISTE using a five-point Likert scale. The pretest assessment focused on participants' attitudes in four areas: computer attitude and anxiety, computer confidence, computer usefulness/integration, and relevance. A reminder message was sent to the entire group one week after the course start date.

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

At the end of the course, participants were asked to complete an online posttest survey. The posttest consisted of the same 35 questions presented on the pretest, plus five qualitative open-ended questions. The qualitative questions examined the same categories of computer attitude and anxiety, computer confidence, computer integration, and relevance of course content. A reminder message was sent out to the entire group one week after the end of the course to encourage posttest completion.

C. Results

The course began with 43 participants including 20 elementary school teachers, 12 middle school teachers, nine high school teachers, and two homebound / hospital or alternative education teachers. Thirty-seven teachers completed the course for an 86% completion rate. Twenty-four participants completed both the pretest and posttest surveys for an overall 65% questionnaire return rate. Pretest and posttest data were analyzed using a Pair Wise t-test. The quantitative data analysis shows a statistically significant difference between pretest and posttest scores. The pretest mean was 129.92 with a standard deviation of 21.09, while the posttest mean was 150.63 with a standard deviation of 14.237 (Table 1).

TABLE 1 PAIRED SAMPLES STATISTICS

		Mean	*N*	Std. Dev.	Std. Error Mean
Pair 1	Pretest	129.92	24	21.088	4.304
	Posttest	150.63	24	14.237	2.906

These results yield a significance level of $p < .000$ thereby indicating a strong treatment effect (see Table 2 and Table 3).

TABLE II PAIRED SAMPLES TEST

	Paired Differences					
	Mean	Std. Dev	Std. Error Mean	t	df	Sig.
Pair 1 Pre Post	-20.708	15.865	3.238	-6.395	23	.000

TABLE III PAIRED SAMPLES CORRELATIONS

		N	Correlation	Sig.
Pair 1	Pre Post	24	.659	.000

The greatest overall mean changes were demonstrated in lowering computer anxiety ($\underline{M}_{Pretest} = 3.09$, $\underline{M}_{Posttest} = 3.92$, Change = .84) and increased computer confidence ($\underline{M}_{Pretest} = 3.63$, $\underline{M}_{Posttest} = 4.35$, Change = .72). Table 4 lists the four specific questions that had the greatest overall mean change.

TABLE IV PRETEST AND POSTTEST QUESTIONS WITH THE GREATEST MEAN CHANGE

Question	Pre Mean	Post Mean	Chge
30: I can identify and locate technology and digital media resources and evaluate them for accuracy and suitability.	3.08	4.25	1.17
14: I possess the skills, knowledge, and understanding of the concepts related to the national technology standards for PK-12 students.	3.13	4.21	1.08
23: I know how to apply technology and digital media to develop students' higher-order skills and creativity.	3.17	4.21	1.04
11: I feel confused and frustrated when attempting to integrate technology and digital media in my curriculum.	3.04	4.09	1.04

Qualitative data was analyzed using constructs of the Loyd/Gressard Computer Attitude Scale [26][27] and Keller's ARCS Model for Motivation [11], looking for the themes of computer confidence, computer usefulness (integration) and relevance. Comments were categorized into the three categories and the percentage of participants indicating each particular attitude was then calculated.

Ninety-one percent of the respondents felt the course was relevant and increased their confidence with integrating technology. The words that participants used most often to describe this class were interesting, informative, great resources, excellent, challenging and eye-opening. They also described their experience as enlightening, supportive, enjoyable, fun, positive, and highly beneficial.

Participants also expressed that they had gained a better understanding of the digital generation. Most said their understanding of the needs of the digital generation had positively increased with 30% expressing that this course has increased their confidence in their ability to integrate technology and 30% stated that their motivation to integrate technology had also increased.

Most participants (64%) stated that their teaching strategies now include more digital media, technology, and outside Internet resources in their lessons. Twenty-seven percent of the participants said that now are more comfortable using and integrating the technology.

Sixty-four percent of the participants' stated that they realized that the Internet and current technologies are an important and effective curricular resource to enhance student learning. They also said again that they their understanding of how to seek to integrate technology into their curriculum increased as a result of their participation in this course. Some participants noted that they had shifted from teacher-centered strategies to student-centered projects as a result of this course.

Many of the participants' felt that the most important thing that they learned in this class was that they could integrate technology and digital media effectively. Thirty-nine percent indicated that they experienced increased confidence in their

ability to integrate technology and digital media, 30% commented that they now understood the importance of using technology with their students, and 30% noted that integrating technology was both relevant and essential in today's classroom.

TABLEV SUMMARY OF QUALITATIVE RESULTS

Question	Computer Confidence	Computer Usefulness	Relevance (ARCS)
What words best describe your experience in this course?	4%		91%
As a result of this course, how has your understanding of the digital generation changed?	30%	26%	30%
As a result of this course, how have your teaching strategies changed to address the needs of the digital generation?	33%	62%	
As a result of this course, how has your integration of technology into the curriculum changed?	27%	64%	
What is the most important thing you have learned in this class?	39%	30%	30%

D. Discussion

The objective of this study was conducted to look for those specific instructional immediacy behaviors that would contribute to student retention rates, changes in attitude, and improved cognitive learning. The professional development course examined in this research study has historically had high retention rates and assessments of final reflection papers revealed a change in attitude on the part of the students.

Research has shown that immediacy behaviors do impact cognitive learning. Krathwohl, Bloom, and Masia [28] note that immediacy behaviors help students have a better attitude because they feel more connected and engaged in the learning process. They also suggest that a positive association results in changes in student behavior, such as increased time on task, which also impacts cognitive outcomes [28]. LaRose and Whitten [13] also found that students' expectation of frequent student-to-teacher interactions was very motivating again impacting student behavior and enhancing cognitive learning. Immediacy behaviors demonstrated by the instructors, the course content, and the technology all facilitated feelings of closeness and liking by the participants and impacted their intrinsic motivation and self-efficacy, as demonstrated in both the quantitative and qualitative results.

The results of the current study demonstrate the positive impact of some relatively easy-to-implement strategies that instructors can use to increase teacher-student immediacy. They include providing social incentives such as providing frequent and specific feedback and praise, addressing the students by name in all correspondence, relating to the students on a personal and professional level, and using emoticons to create a supportive tone. The relevance and quality of course content also provided to perception of immediacy in student-content relationships. As per the tenants of Keller's (1986) ARCS model, those participants who found the content very relevant was because they were able to immediately apply learning to their own teaching situation. This course provided students with autonomy and increased their self-regulation because they could choose their own learning path, exploring resources in content and at the textbook Web site specific to their classroom situation, making it very motivating to students.

Finally, a review of the data collected suggests that the technology provided a great deal of immediacy. Through coaching and support by their instructor, students were able to be successful with using new technologies and learned how to effectively use the Internet. As noted by LaRose and Whitten [13], using technology effectively provides a great deal of social status.

One of the weaknesses of this research study is that only 4% of the participants completing the pretest and posttest survey were male. Therefore, the data may not be applicable to a larger population. Pretest and posttest data was also not viewed or sorted by instructor. It is possible that one instructor demonstrated more immediacy than another. This was not controlled for in the study. However, the immediacy provided by the content and the technology was similar for every student.

IV. CONCLUSIONS

The need for and the occurrence of research on immediacy behaviors in online courses is increasing. Additional research in this area is warranted, especially as it relates to the positive impact immediacy behaviors have on cognitive learning. Online instructors need to learn simple and easy-to-implement strategies that have a positive impact on student learning. A broader implementation of these strategies could help reduce the high non-completion rates, especially for K-12 students and college freshman. Additionally, research into K-12 high student attrition in online courses could be revealing since these individuals see technology mostly as a social networking tool, which may present resistance to viewing it as a tool for learning.

Additional research could also be conducted examining gender differences on the importance of a sense of connectedness in the online classroom. Woods and Ebersole [20] noticed in their study that women made the most positive comments about using the personal discussion boards. Another area for further research would be to investigate computer immediacy as posited by LaRose and Whitten [13]. As multimedia technologies, software applications, and operating systems continue to change and become more interactive, the role of computer immediacy in creating a sense of connectedness may take on increasing importance with younger online learners.

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

Open Science Index, Educational and Pedagogical Sciences Vol:1, No:11, 2007 publications.waset.org/481/pdf

ACKNOWLEDGMENT

G. A. Gunter thanks 21st Century Learning Solutions for their support in providing the data and research opportunity.

REFERENCES

[1] B. Geibert and S.H. Harvey (eds.), *Web Wise Design: Lessons from the Field*. Englewood Cliffs, NJ: Educational Technology Publications, 2001.
[2] D.F. Nobel, *Digital Diploma Mills: The Automation of Higher Education.* New York: Monthly Review Press, 2001.
[3] L. Morris, S. Wu and C. Finnegan, Predicting retention in online general education courses. *The American Journal of Distance Education*, vol. 19(1), pp. 23-36, 2005.
[4] J. Lorenzetti, 'Before they drift away: Two experts pool retention insights". *Distance Education Report* vol. 6(8), pp. 1–2, 2002.
[5] E.J. Stodel, T.L. Thompson, and C.J. MacDonald, "Learners' perspectives on what is missing from online learning: Interpretations through the community of inquiry framework". *International Review of Research in Open and Distance Learning* vol. 7(3), pp. 1-24, 2002.
[6] A.P. Rovai, M.K. Ponton, M.J. Wighting, and J.D. Baker, "A comparative analysis of student motivation in traditional classroom and e-learning courses", *International Journal on E-Learning*, vol. 6, pp. 413-432, 2007.
[7] I.E. Allen and J. Seaman, *Growing by Degrees: Online Education in the United States*. Needham, MA: Sloan Consortium, 2005.
[8] P. Moskal, C. Dziuban, R. Upchurch, J. Hartman, and B. Truman. "Assessing online learning: What one university learned about student success, persistence, and satisfaction", *Peer Review*, pp.26-29, 2006.
[9] S. Young, "Student views of effective online teaching in higher education". *The American Journal of Distance Education*, vol. 20(2), pp. 65-77, 2006.
[10] A. Bandura, *Social Foundations of Thought and Action: A Social Cognitive Theory*, Englewood Cliffs, NJ: Prentice-Hall, 1986.
[11] J.M. Keller, "Strategies for stimulating the motivation to learn". *Performance and Instruction*, vol. 26(8), pp. 1-7, 1987.
[12] M. Allen, M., P. Witt, and L. Wheeless, "The role of teacher immediacy as a motivational factor in student learning: Using meta-analysis to test a causal model". *Communication Education*, vol. 55(1), pp. 21-31, 2006.
[13] R. LaRose and P. Whitten, "Re-thinking instructional immediacy for web courses: A social cognitive exploration". *Communication Education*, vol. 49(4), pp. 320-338, 2000.
[14] H. M. Hutchins, Instructional immediacy and the seven principles: Strategies for facilitating online courses. Available: *Online Journal of Distance Learning Administration*, vol. 6(3). Accessed April 2, 2007, from http://www.westga.edu/~distance/ojdla/fall63/hutchins63.html.
[15] M. Miltiadou and W. Savenye, "Applying social cognitive constructs of motivation to enhance student success in online distance education". *AACE Journal*, vol. 11(1), pp. 78-95, 2003.
[16] J. Keller and K. Suzuki, "Learner motivation and e-learning design: A multinationally validated process", *Journal of Educational Media (Special Issue)*, vol. 29(3), pp. 229-239, 2004.
[17] D.R. Garrison, T. Anderson, and W. Archer, "Critical inquiry in a text-based environment: Computer conferencing in higher education". *Internet and Higher Education* vol. 2(2-3), pp. 87-105, 2000.
[18] S. R. Aragon, "Creating social presence in online environments". *New Directions for Adult and Continuing Education*, vol. 100, pp. 57-68, 2003.
[19] L. Rourke, T. Anderson, D.R. Garrison, and W. Archer, "Assessing social presence in asynchronous text-based computer conferencing". *Journal of Distance Education*, vol. 14(2), pp. 50-71, 1999.
[20] R. Woods and S. Ebersole, "Using non-subject-matter-specific discussion boards to build connectedness in online learning". *The American Journal of Distance Education 17*(2), pp. 99-118, 2003.
[21] R. Ryan and E. Deci, "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being". *American Psychologist*, vol. 55(1), pp. 68-78, 2000.
[22] R.B. Pipes and J.M. Wilson, "A multimedia model for undergraduate education". Available: *Technology in Society, 18*, pp. 387-401. Accessed April 2, 2007, from www.sciencedirect.com.
[23] P.T. Northrup, "Online learners' preferences for interaction". *Quarterly Review of Distance Education*, vol. 3(2), pp. 219-16, 2002.
[24] K.A. Krentler, and L. Willis-Flurry, "Does technology enhance actual student learning? The case of online discussion boards". *Journal of Education for Business*, vol. 80(6), pp. 316-321, 2005.
[25] A. Rovai, "Building sense of community at a distance". Available: *The International Review of Research in Open and Distance Learning, 3*(1). Accessed January 22, 2007, from http://www.irrodl.org/index.php/irrodl/article/viewArticle/79/152
[26] C.P. Gressard and B.H. Lloyd, *Validation studies of a new computer attitudes scale*. Chicago, IL. (ERIC Document Reproduction Service No. ED264 297, 1985.
[27] C.P.Gressard and B.H. Lloyd, "Validation studies of a new computer attitude scale." *AEDS Journal*, vol.19(4), pp. 295-301, 1986.
[28] D.R. Krathwohl, B.S. Bloom, and B.B. Masia, *Taxonomy of education objectives: Handbook II. Affective domain*. New York: McKay, 1964.

Glenda A. Gunter received her PhD in 1994 in educational and instructional technology at Mississippi State University in Starkville Mississippi with a minor in management of information systems. Dr. Gunter is a nationally recognized authority on technology integration in the K-20 classroom. She has co-authored over a dozen books on the subject. Most recent is *Teachers Discovering Computers: Integrating Technology and Digital Media into the Classroom (5th).* Dr. Gunter has been a member of the Association of Educational Communications and Technology since 1996 and has served on several committees. She is an active member in American Educational Research Association, International Digital Media and Arts Association, and the Society of Instructional Technology and Teacher Education. Dr. Gunter has won several teaching and research awards over her career and is recognize by her colleagues as an outstanding teacher and educator.

She is an Associate Professor and Program Coordinator of Educational Technology program and Co-Chair of the Ph.D. in Instructional Technology at the University of Central Florida. Most recent articles include Enhancing literacy skills through digital narrative, published in 2006 in *The Journal of Media Literacy*, A case for a formal design paradigm for serious games published in *The Journal of the International Digital Media and Arts Association*, and in 2007: Taking educational games seriously in the *Educational Technology Research and Development Journal*. Her research interests include integration of technology into the classroom and designing instructional content in video games.