

## **Distance and Traditional Education Teaching the Same Course via Instructional Television and Traditional Educational Formats: A Case Study**

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### **ABSTRACT**

This case study is designed to investigate how distance education technology affects the instructor's simultaneously teaching the same course via instructional television (ITV) and traditional education (face-to-face) formats. This study involved random observations of the instructor in a graduate course in both instructional television and face-to-face classrooms. In addition, an interview with the instructor was conducted to collect more data. This study has suggested that the instructor who teaches the same course in both ITV and traditional education formats exhibits both similarities and differences among the three instructional phases (before-class, in-class, and after-class) in both situations. The results of this study will have significant implications for future distance education instructors.

**Keywords:** Distance education, instructional television instruction, traditional education, instructional phases, and case study.

### **INTRODUCTION**

With the recent hardware and software innovations in communication technology, distance education technology has emerged rapidly and it has become a major topic in education all over the world in recent years. Currently, there are many variants of mediated distance education, including instructional television (ITV), web-based instruction (WBI), a hybrid of ITV and WBI, and web-enhanced instruction. Although the use of WBI is increasing now, ITV is still advantageous in some aspects. For instance, ITV can offer "face-to-face" meetings on the TV screens which allow interactive communication and immediate feedback between instructors and learners, as well as between learners and learners in the distance education classroom (Garrison, 1990). Thus, ITV is still widely used in many institutions all over the world (Pool, 1996; Phipps & Merisotis, 1999).

ITV instruction is different from traditional face-to-face instruction, especially in the social and domestic contexts between both formats (Morgan, 1991). For instance, learners can only see and talk to each other on TV screens in ITV settings, while learners can see and talk to each other directly in the traditional classrooms. Because of this difference, distance education technology has challenged and reshaped traditional instruction. Now almost every professional organization's publications and conferences have shown a big increase in distance education (Simonson, Smaldino, Albright, & Zvacek, 2000). A growing body of recent research in this area has consistently indicated that distance educational technology has considerable effects on instruction and administration (Berge, 1995; Cheng, Lehman, & Armstrong, 1991; Davie & Wells, 1991; McIssac et al., 1989; Phipps & Merisotis, 1999).

In recent decades, there have been an increasing number of studies involving the learners' characteristics and learning in distance education (Davie & Wells, 1991; Morgan, 1991; O'Malley & McCraw, 1999; Wallace, 1996). In the 1980's, five research categories studied most frequently in distance education included instruction (learning, attitudes, and drop-outs) and administration (cost-effectiveness and courseware design) (McIssac et al., 1989). In the 1990's, three areas—course and program design, effectiveness of technology, and general research—have recently received the greatest attention in the recent distance

education literature (Phipps & Merisotis, 1999). Other areas also explored include student support, advising, and commentaries. Therefore, compared with research dealing with the learners' learning, there is much less research regarding the teacher's improvement of the teaching/learning process through technology in both ITV and traditional education formats. Due to this fact, there is a need to study the teacher's improvement of the teaching/learning process through distance education technology in current distance education research.

In addition, recent research has consistently indicated that instructor/instruction is one of the several major dimensions affecting the learners' satisfaction with ITV courses in distance education (Biner, Dean, & Mellinger, 1994; Phipps & Merisotis, 1999). Therefore, some recent research has been shifting from a focus on the learners' learning to a focus on faculty issues in distance education. These include such topics as faculty planning and training, as well as instructional design (Dwyer & Li, 2000; Gehlauf, Shatz, & Frye, 1991; Olcott, 1996; Rockwell, 2000; Smaldino, 1999). According to Phipps and Merisotis (1999), faculty issue is one of the two areas receiving the least attention in current distance education research literature (the other being library services).

In order to meet various learners' needs, more and more institutions are experimenting in offering an increasing distance education courses to their students. Some are even simultaneously offering different sections of the same course in different environments, such as ITV, web-based, or traditional instruction. However, very few studies have been reported in the literature regarding the instructor's simultaneous teaching in both ITV and traditional educational formats. In order to ensure quality of instruction in both ITV and traditional education formats, there is an urgent need to provide practical recommendations for the instructors offering distance education courses (Phipps & Merisotis, 1999). Therefore, this study is designed to explore how distance education technology affects the instructor's instruction in both ITV and traditional education formats and to propose recommendations for future practioners in this area. Specifically, this case study investigates the instructor who simultaneously teaches the same course in both ITV and traditional education formats. The major research questions of this study are:

- How does distance education technology affect the instructor in both ITV and traditional education formats?
- What are the similarities and the differences among the instructional phases of simultaneously teaching the same course in both ITV and traditional education formats?

## **RESEARCH METHODOLOGY**

### **Participant of the Study**

The instructor participant who, in the same term (spring 1999), taught the same course in both ITV and traditional classrooms at a middle-size regional university in the United States, was selected. This male educational administration instructor has teaching and administrative experiences in public schools. This instructor was then the department head. He has several years of university teaching experience and several semesters of teaching graduate courses in ITV settings. In addition, this instructor preferred using inquiry instructional strategy in his traditional education. Specifically, he usually prepared and asked his learners questions (usually with hints) related to the subject matter, as well as engaged them in class discussion. Spring 1999 was the first semester for this instructor to simultaneously teach the same graduate course (Public School Law) in both ITV and traditional formats: one on Monday evening and the other on Tuesday evening. The two separate sections of the same course were randomly observed by the researcher of this study.

### **Descriptions of the ITV and Traditional Sites**

**ITV classroom description** The ITV classrooms in this study had one originating site and two remote sites. The originating site was a large classroom located at the university's main campus. The course was broadcast to the other two remote locations. In the originating site,

there were two rows of TVs on the ceiling. Each row has four TVs. One row was for the instructor to view and control all sites. The other row was for the students in the originating site to view students in the remote sites. For the instructor, there was one ITV educational control system, one PC with two speakers, one microphone, one document projector, one VCR, one telephone on the front desk, one fax machine on the other front desk, as well as one high chair in front of the front desk. For the students, there were several rows of study tables and chairs, as well as several microphones installed in the ceiling for students to communicate with other students at the remote sites. There were 14 students in the originating site, 7 in one remote site, and 2 in the other remote site. The equipment in the other two remote sites was very similar to that in the originating site. Since the two remotes were far away from the originating site, the instructor only taught at the originating site 3 hours per week on Monday evening for a 16-week semester.

**Traditional classroom site description** The traditional classroom was a large classroom located at an off-campus site. In the classroom, there was a variety of available teaching equipment that included one TV, one VCR, one PC, two speakers, one projector, and one blackboard. There were also many study tables for students. Every two tables were placed together so that several students could sit around the two tables and discuss with one another in class. There were 29 students in the traditional classroom. The instructor taught this section 3 hours per week on Tuesday evening for a 16-week semester.

### **Procedure**

First, a variety of technologies were used to collect qualitative field data in observations and interviews. These technologies included camera, audio tape recorder, tape, film, notebook, file folder, paper, pencils, and inked/colored pens. Second, several qualitative methods were involved in this study, including non-participant observations, interviews, surveys, and validation.

**Non-participant observations** Naturalistic approach, which was considered one of the three major international methodological approaches in distance education (Burge et al.,1990), was employed in this study. That is, this study involved non-participant observations. Specifically, securing the agreement to participate, the instructor granted access to both his traditional and ITV classrooms. His ITV class was scheduled each Monday evening and his traditional class was scheduled each Tuesday evening, both for a 16-week term. Both sections were delivered in the evening time and each class period lasted approximately 3 hours. Both classrooms were randomly observed by the researcher of this study in spring 1999: five times for the ITV classroom and four times for the traditional classroom. In all, 27 hours of random field observations were conducted. Detailed field notes and research journals were completed for each observation. Then, all observation notes and research journals were edited and typed.

**Interviews** A 60-minute semi-structured interview was conducted with the participant during the semester. This interview was tape-recorded. A pre-interview questionnaire was prepared that included 12 questions regarding the participant's beliefs and experiences about distance education technology. In addition, the participant completed a brief survey that included 12 multiple-choice questions. After the interview, the interview tape was transcribed and edited.

**Validation** Since participants can see experiences in ways researchers cannot (Ely, Vinz, Downing, & Anzul, 1997), member checks, such as interviewing with the participant and listening to his voices, were conducted with the participant. According to Coldeway (1988), member checks were regarded as one of the five basic research strategies in distance education research.

In this study, this procedure can not only eliminate the researcher's biases and false consciousness about this study, but also can allow the researcher and others to see past the edges of the researchers' vision. Therefore, through this dialectic exchange, the research findings will finally be further shaped.

## **FINDINGS AND DISCUSSION**

According to Jackson (1968), teaching includes both interactive teaching and preactive teaching. Interactive teaching refers to the in-class phase while preactive teaching refers to either prior to (before-classes) or after (after-classes) the interactive teaching phase. Both ITV and traditional education formats in this study involved interactive and preactive teaching. The major findings of this study highlight the effects of distance education technology on the same instructor at the above three instructional phases (before-class, in-class, and after-class) in both ITV and traditional education formats. Specifically, the findings in this study have answered the two research questions raised at the beginning. That is:

1-Distance education technology considerably affects the instructor's instruction at three phases:

- before-classes,
- in-classes, and
- after-classes;

2- There are both similarities and differences among the above three phases in both ITV and traditional education formats. These two major highlights in the three instructional phases are integratively presented and discussed as follows:

### **Phase 1: Before-Classes**

A major similarity in Phase 1 in both ITV and traditional education formats was that the instructor prepared similar instructional materials and requirements for both ITV and traditional education classrooms. These materials included the textbooks, the quizzes, the case study materials, PowerPoint presentations, and other supplemental materials including materials designed to be on the Web. This finding supports previous research results. According to Wolcott (1993), one of the instructor's planning characteristics for distance courses is content-oriented rather than process-oriented. Therefore, the content planning in both ITV and traditional education formats are similar. Accordingly, the instructional objectives for both of these two formats are similar.

However, there were two major differences in this phase as well. The instructor reported that (1) it was more time-consuming and (2) the planning process was more complicated, in terms of course preparations in ITV classroom than in the traditional classroom. These ITV preparations usually included, but were not limited to, mailing and faxing materials to the remote sites, designing the distance course, and putting online supplemental materials on the web in a timely manner for students to access. As the instructor remarked during the interview, the preparation of distance courses is much more time-consuming. It takes a lot more time to manage a distance education class with multiple sites, because one of the things I want to accomplish is not to lessen the contact or cover less or require students to do something that might be different or perceived as less rigorous than what I would have in regular classes.

So what you noticed in observing me is that I gave quizzes every week for reading materials. What you may notice is that the quiz I mailed on Thursday had not arrived on Monday. Of course, you know, sorting these things out and having them mailed takes more time than just making copies and bringing them to classes. In order to cover that, I now must fax the quizzes to each of the sites because the mail has not got them there on time.

Therefore, although technology can facilitate instruction for distance classes, it took much more time for the instructor to make high quality preparations for the distance courses in order to achieve similar instructional objectives in both ITV and traditional educational formats. These findings support previous findings.

According to Burnham (1988), higher quality preparations and more time will usually be needed to provide effective education to the distance students.

### **Phase 2: In-Class**

The major similarities in Phase 2 in both ITV and traditional education formats are twofold. First, the instructor used a similar inquiry-based instructional method in both ITV and traditional education formats. The basic premise of this inquiry-based instructional method was that the instructor prepared and initiated questions for class discussion. These questions were delivered on the web for both ITV and traditional classes. This method involved reviewing relevant instructional materials, presenting and teaching the new materials on the web, asking and reflecting questions (e. g, case studies), as well as summarizing the learners' answers. This inquiry-based instructional method is similar to the discussion-based teaching—one of the four important views of teaching and learning in ITV education (MacKinnon, Walshe, Cummings, & Velonis, 1995). In addition, this finding supports two of Perraton's (1988) major statements from existing theories in distance education. According to Perraton, it is possible to organize dialogue and discussion between students and instructors in distance education; group discussion is an effective tool of distance learning.

Second, the instructor followed a similar instructional procedure in both ITV and traditional education classrooms. This complete instructional procedure included administering chapter quizzes, reviewing quiz items and out-of-class assignments, presenting the new materials, asking and discussing questions, summarizing the learners' answers, and assigning projects. However, the above two findings are not completely congruent with the previous findings in the ITV literature. For instance, the ITV instructor is conventionally referred to as the "talking head". That is, in ITV classes, the instructor usually talks all the time; there is not much participation and discussion from the students (Gehlauf, Shatz, & Frye, 1991; Mottet, 1998).

The above two similarities may be related to the instructor's unique teaching style and available time during that semester. In addition, the inquiry-based instruction in ITV is very positive since it can stimulate the interaction between learners and the teacher. However, the instructor has already noticed that he used a similar instructional procedure in both formats and that he did not adapt his ITV instruction effectively. This is obviously related to his available time since he did not have enough time to modify his instructional procedure in his ITV class. As he remarked during the interview:

*My teaching style probably has not been modified enough. I probably try to teach my classes alike, with each class the same way that is probably not good. But at this time I am not interested in modifying. Quite frankly, I don't have enough time to put into that.*

However, the major differences in this phase are shown in the following many aspects: First, the instructor employed more educational technology in the ITV classroom than in the traditional classroom. In all observations in the ITV classroom, the instructor used a variety of available educational technologies to assist instruction. For example, the instructor used the fax machine to send quizzes and other instructional materials to the students in remote sites, used the document projector and the Web to display and teach instructional materials, used the telephone to call the coordinator in remote sites for assistance, and used the computer and the Web technology to deliver his PowerPoint presentations. This finding supports one of Perraton's (1988) statements from existing theories in distance education. That is, any available technology resources can be used to support distance learning. However, in the traditional classroom, the instructor only used the computer, the Web technology, the projector, and the blackboard for instruction. However, the instructor could adapt more by using additional technology to assist his ITV class, such as establishing a list server or a discussion list to achieve more interaction.

Second, the instructor had to be more patient in the ITV classroom than in the traditional classroom due to more unpredictable technology problems. The frustrating experiences

resulting from technological problems made it difficult for both the instructor and the students to communicate well in ITV classes. Sometimes, faxing a quiz to a remote site took nearly 30 minutes, or even longer. However, according to the participant, this kind of patience sometimes has advantages since it can allow students more opportunities to respond to the instructor's questions. However, in the traditional classroom, the instructor did not have to be so patient since the instructor did not have to rely completely on educational technology, and technological problems were not an issue.

Third, there was sometimes less time for class discussion due to unexpected technology problems in the ITV classroom which did not occur in the traditional classroom. Since the instructor spent more time dealing with unexpected technology problems (e. g. the fax did not go through as expected), he had relatively less time for class discussion and involvement in the ITV classroom than in the traditional classroom. In one observation, the instructor tried to fax a chapter quiz to the other two remote sites at the beginning of the class. Unfortunately, he failed to fax the quiz to one of the two remote sites for the first 20 minutes. Even worse, the site assistant was not available to help him at that time. As a result, the whole instructional procedure in the three sites was delayed by this event. But since the instructor desired to cover the same materials as in the traditional classroom, he just only cut the time for class discussion in the ITV classroom.

Fourth, the in-class management was much more difficult and time-consuming in the ITV classroom than in the traditional classroom. It was also harder for the instructor and the students to see each other's mediated facial responses on TV screens from multiple remote sites. This may be related to the instructor's familiarity and skills with the distance education technology. However, in the traditional classroom, the instructor could easily manage the in-class environment since everything is direct.

Fifth, the instructor had to speak louder in the ITV classroom than in the traditional classroom. Since the instructor was afraid that students in remote sites might not hear him clearly, he always shouted in his ITV classes. Just as the instructor remarked during the interview, I found myself too shouting, talking much louder in distance classes. I am afraid they cannot hear me clearly. And so I found myself too shouting in all of my distance classes. However, in the traditional classroom, the instructor did not have to shout much since all students could hear him easily and clearly. In fact, the instructor did not have to shout in his ITV class. Obviously, this is related to his misunderstanding of the sound effects of the ITV technology.

Sixth, it was harder for the instructor to monitor all students from multiple local and remote sites in the ITV classroom than in the traditional classroom. In most situations in this ITV course, there was more participation and discussion from students in the originating site and less participation in the remote sites. Sometimes, students or students' questions and discussions in remote sites were even ignored. On one hand, this is related to the restricted bandwidth of the distance education technology; on the other hand, it may be related to other factors, such as class sizes, the instructor's attention characteristics, and the instructor's professional training and experiences in distance education. However, in the traditional classroom, the instructor could simultaneously monitor all students easily.

Seventh, the instructor's teaching style was more restricted in the ITV classroom than in the traditional classroom. Although occasionally the instructor could walk away for a short while from the instructor's desk, in most cases, he could not walk around in the originating site; otherwise, the students from other remote sites could not see him on the TV screens and would lose physical contact with him. Therefore, the instructor had to stand or sit on the chair in front of the instructor's desk for the whole class period in the ITV classroom. However, in the traditional classroom, the instructor could stand, sit, and walk around freely in the classroom, as well as write freely on the blackboard.

Eighth, the instructor's temporary "absence" frustrated most students in the remotes sites. Almost in every weekly ITV meeting, the instructor used his Power Point presentations

and/or Web materials. Of course, this type of visual presentation is good for students only in the originating site, but not good for students in the remote sites since those students can only view the presentations, rather than viewing both: the instructor and the presentation. This may be obviously related to the limits of the current ITV technology. However, in the traditional classroom, the above temporary "absence" never happened since students can simultaneously view both the instructor and the presentations.

### **Phase 3: After-Classes**

There is one major similarity in this phase. Specifically, the instructor initially asked the students in both ITV and traditional education classrooms to submit their assignments and papers via e-mail after class. In fact, e-mail communication has been considered as one of the important strategies to facilitate adult learning in distance education (Russett, 1994). However, this took the instructor a lot of extra time to read the assignments and give feedback to each student via e-mail. After several weeks, however, the instructor did not have enough time to read large volumes of e-mail messages, print them out, and give separate feedback. Due to this fact, he had to treat students in ITV and traditional classrooms differently from the middle of that semester to the end of the study. That is, ITV students could continue submitting their assignments and papers via e-mail, while the students in the traditional classroom were told to turn in their hard copies of their assignments and papers, rather than submitting them via e-mail. Again, this suggests that preparations for distance courses are more time-consuming after classes.

In sum, it can be concluded that the instructor used traditional approaches (e. g., lecture and inquiry-based discussion) and technology-based methods (PowerPoint presentations, e-mails, and access to the web materials) in both his ITV and traditional education classrooms. However, it is clear that the instructor employed more technology-based methods for his ITV classrooms and more traditional approaches for his traditional classrooms. This finding is very promising since the instructor is aware of using more educational technology to facilitate his ITV class. Conventionally, most ITV instructors tend to use traditional approaches "talking head" in their distance classrooms although they think that these methods are not effective in distance environments (Gehlauf, Shatz, & Frye, 1991; Mottet, 1998). This promising finding may be related to the rapid development of educational technology in recent years, as well as being related to the instructor's enhanced technology skills.

However, there are limitations in this study. First, this study is a case study. All research findings are related to the particular instructor in that university. Second, this study only involved random field observations in both ITV and traditional classrooms. Third, this study was primarily related to the instructor's instructional methods of the ITV courses. It is not simply an issue of the effects of the specific medium such as ITV or traditional classes. Therefore, care has to be taken when the findings in this study are generalized to other similar contexts.

### **SUMMARY**

This exploratory study has suggested that the instructor who teaches the same course in both distance education and traditional classrooms exhibits both similarities and differences in the three instructional phases in both situations. The similarities in both situations include 1- Before classes: preparing similar instructional materials, 2-in classes: using an inquiry-based instructional method and a similar teaching procedure, and 3- After classes: asking students to submit assignments via e-mail. However, there are more crucial differences, which include;

- Before classes: more time-consuming course preparations,
- In classes: more use of distance education technology, the instructor had to be more patient, less time for class discussion, in-class management was more time-consuming, the instructor had to speak louder, it was harder to manage multiple

- sites, the teaching style was more restricted, and the instructor's "absence" frustrated remote students, and
- After classes: the instructor had to do more computer-mediated communication in the ITV classroom than in the traditional classroom.

In all, different instructional strategies should be employed in the ITV instruction since ITV and traditional education formats are quite different media. Simply transferring the instructional strategies in the traditional classroom to the ITV classroom will not be enough. The most important is that the instructor should design and teach the ITV course appropriately and differently from traditional classes in order to teach ITV courses effectively (Liu & Ginther, 1999). That is, appropriate modifications of the traditional strategies to adapt to the ITV instruction will be needed. Therefore, the results of this study will have significant implications for future instructors who plan to teach distance education courses.

#### Editor's Note:

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#### REFERENCES

- Berge, Z. L. (1995). "Facilitating computer conferencing: Recommendations from the field". *Educational Technology*, 35(1), 22-30.
- Biner, P. M., Dean, R. S., & Mellinger, P. (1994). "Factors underlying distance learner satisfaction with televised college-level courses". *The American Journal of Distance Education*, 8(1), 60-71.
- Burge, E. J., et al. (1990). International perspectives on distance education research. *Paper presented at the Preconference Workshop ICDE World Conference, Caracas, Venezuela.* (ERIC Document Reproduction Service No. ED 352 001).
- Cheng, H. C., Lehman, J., & Armstrong, P. (1991). "Comparison of performance and attitude in traditional and computer conferencing classes". *The American Journal of Distance Education*, 5(3), 51-64.
- Coldeway, D. O. (1988). "Methodological issues in distance education research". *The American Journal of Distance Education*, 2(3), 45-54.
- Davie, L. E., & Wells, R. (1991). "Empowering the learner through computer-mediated Communication". *The American Journal of Distance Education*, 5(1), 15-23.
- Dwyer, F., & Li, N. (2000). "Distance Education Complexities: Questions to be Answered". *International Journal of Instructional Media*, 27(1), 25-28.
- Ely, M., Vinz, R., Anzul, M., & Downing, M. (1997). *On writing qualitative research: Living by words*. Bristol, PA: The Falmer Press.
- Garrison, D. R. (1990). "An Analysis and Evaluation of Audio Teleconferencing to Facilitate Education at a Distance". *The American Journal of Distance Education*, 4(3), 13-24.
- Gehlauf, D. N., Shatz, M. A., & Frye, T. W. (1991). "Faculty perceptions of interactive television instructional strategies: Implications for training". *The American Journal of Distance Education*, 5(3), 20-28.
- Jackson, P. W. (1968). *Life in the classroom*. New York: Holt, Rinehart, & Winston.
- Liu, Y., & Ginther, D. (1999). "Cognitive styles and distance education". *The Online Journal of Distance Learning Administration*, 2(3). Available <http://www.westga.edu/~distance/liu23.html>.

Mackinnon, A., Walshe, B., Cummings, M., & Velonis, U. (1995). "An inventory of pedagogical considerations for interactive television". *Journal of Distance Education*, 10(1), 75-94.

McIssac, M. S. et al. (1989). Research in distance education: Methods and results. *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology*. Dallas, TX, USA. (ERIC Document Reproduction Service No. ED 308 827).

Morgan, A. (1991). *Research Into Student Learning In Distance Education* Victoria, Australia: (p. 14). Deakin University.

Mottet, T. P. (1998). Teaching from a distance: Hello. Is anyone out there?, *Paper presented at the Annual Ethnography in research forum*. Philadelphia, PA, USA (ERIC Document Reproduction Service No. ED 417 436).

Olcott, D. Jr. (1996). "Destination 2000: Strategies for managing successful distance education programs". *Journal of Distance Education*, 11(2), 103-115.

O'Malley, J., & Mccraw, H. (1999). "Students' perceptions of distance learning, online learning and the traditional classroom". *The Online Journal of Distance Learning Administration*, 2(4). Available <http://www.westga.edu/~distance/omalley24.html>.

Perraton, H. (1988). "A Theory for Distance Education". In D. Sewart, D. Keegan, & B. Holmberg (Ed.), *Distance education: international perspectives* (pp. 34-45). New York: Routledge.

Phipps, R., & Merisotis, J. (1999). *What Is The Difference? A Review Of Contemporary Research On The Effectiveness Of Distance Learning In Higher Education*. Washington, DC, USA: THE INSTUTUTE for Higher Education Policy.

Pool, P. (1996). "Teaching via interactive television: An examination of teaching effectiveness and student satisfaction". *Journal of Education for Business*, 72(2), 78-81.

Rockwell, K. (2000). "Faculty education, assistance and support needed to deliver education via distance. The Online Journal of Distance Learning Administration", 3(2). Available <http://www.westga.edu/~distance/rockwell32.html>.

Russett, J. A. (1994). *Telecommunications and pre-service teachers: The effects of using electronic mail and a directed exploration of Internet on attitudes*. Lincoln, Nebraska, USA. (ERIC Document Reproduction Service No. ED 368 571).

Simonson. M., Smaldino, S., Albright, M., & Zvacek, S. (2000). *Teaching And Learning At A Distance*. Upper Saddle River, NJ, USA: Merrill/Prentice Hall.

Smaldino, S. (1999). "Instructional design for distance learning". *Tech Trends*, 43(5), 9-13.

Wallace, L. (1996). "Changes in the demographics and motivations of distance education students". *Journal of Distance Education*, 11(1), 1-31.

Wolcott, L. L. (1993). "Faculty planning for distance teaching". *The American Journal of Distance Education*, 7(1), 26-33.