Elementary Students Responsiveness and Video Conferencing

Penny Lensegrav
Spearfish Elementary Schools
Spearfish, South Dakota

Kristi L. Pearce
Black Hills State University
Spearfish, South Dakota

Abstract

The purpose of this study was to investigate the responsiveness of elementary age students to the use of video conferencing techniques. The action research design assessed student reactions via classroom observations, participant surveys, and structured interviews. Study participants included two fourth grade classrooms, five teachers, two administrators, one college student and one college professor.

The first aspect of inquiry was the age of the distance learners. Are fourth graders developmentally able to benefit from distance education? The second point of inquiry involved the motivation and engagement factor of teaching via a distance. Would video conferencing provide ample interaction to engage elementary students during instruction?

Introduction

Fitzpatrick (2001) suggests that public as well as political interest in distance education is high in geographical regions where the student population is widely distributed. Furthermore, he found that public policy leaders, in some states, recommend the use of distance education as opposed to traditional learning. The rural and remote nature of South Dakota seems to reflect such perspective. The state purchased distance education equipment to be placed in all high schools and middle schools across South Dakota, and offered teacher training to become skilled in the use and implementation of the equipment. As a result, many elementary and secondary teachers completed training offered by the state in the use of videoconferencing equipment (V-tel systems) and the Digital Dakota Network(DDN). Although educational research in the distance education arena has concentrated on its use with college students and professors (Mottet, 1998a), the purpose of this research study was to investigate the responsiveness of elementary students to distance education and the use of videoconferencing instruction.

Review of Related Literature

In the past decade, Verduin and Clark (1991) viewed distance education as the "separation of teacher and learner for at least a majority of the instructional process… with the use of educational media to unite the teacher and learner to carry course content or the provision of two-way communication between an educational agency and learner" (p. 5). It seems that good distance teaching practices are basically identical to good traditional teaching practices and "those factors which influence good instruction may be generally universal across different environments and populations" (Wilkes & Burnham,

1991, p.44). However, Kelly (1990) indicated that the transition from regular instruction in the traditional classroom to distance education requires teachers to develop new skills in instructional strategies, methods of teaching, timing, interactions, feedback, materials and evaluation. According to Wilkes and Burnham, practicing good traditional teaching is what teachers do everyday; and therefore the transition to distance teaching practices should be easy! Interestingly enough, Souder (1993) found that the instructional format itself has little effect on student achievement as long as delivery is appropriate to the content.

Furthermore, Souder (1993) suggested that teaching is a relational activity, and that the teaching and learning situation can be enhanced by an ongoing interpersonal relationship between the teacher and the student. Consequently, a major concern for both teachers and students involved in distance education is the level of teacher-to-student interactions, including the verbal and nonverbal cues, during the actual distance education class times. Likewise, Swan and Jackman (1996) found that strategies for teaching at a distance are merging with traditional teaching because the traditional teaching strategies are abandoned and modified in favor of a problem-based or activity-based approach that de-emphasizes the teacher as the main source of knowledge.

Brooks and Woolfolk (1997) conducted research relative to primary and secondary education that suggested teachers in the traditional face-to-face classroom form impressions of their students based on the students' nonverbal responsiveness. This research included such nonverbal behaviors as: where the student sits on the first day of class (assuming student choice), student posture, eye contact, and smiling. As a result, they compared the nonverbal cues in a face-to-face classroom and the nonverbal cues in a distance-learning classroom. Their findings showed a significant decrease in the ability of the distance educator to perceive the nonverbal responses of their students. This study also found that teachers negatively altered their impressions of students due to lack of attentiveness cues from students at the remote site. As a result, Brooks and Woolfolk concluded that even though many institutions promote interactive technologies as able to simulate the face-to-face classroom experience, the data suggested otherwise in terms of capturing and transmitting nonverbal cues that have been shown to be an important source of information to teachers.

So, how does such educational research impact the use of distance education in elementary and secondary schools? Specifically, how will children respond to the use of such distance education techniques as video conferencing?

Action Research Approach

The purpose of this action research study was to investigate the responsiveness of elementary age students to the use of video conferencing techniques using qualitative research methods. Mills (2000) suggested that a qualitative or descriptive way of examining a problem is reflected in most action research literature. According to Guba (1981), the trustworthiness of a qualitative study relies on addressing credibility, transferability, dependability and confirmability. Consequently, to establish validity, this study involved the following:

> By conducting the distance education class for nine sessions over three months time provided a prolonged experience for study. Likewise, multiple data sources were triangulated to analyze for patterns and common themes to emerge.

By collecting detailed, descriptive data, the researchers create portraiture for readers of the study to view.

By gathering multiple sources of data and inviting others (colleagues, principal) to analyze the data, dependability of the results was addressed.

By having various participant observers, the gathered data was confirmed and a certain level of objectivity was maintained.

Definitions

Host site: The school where the instructing teacher was located and where the course originated during the collaborating sessions. The teacher was physically in the room with the students. The host site for this study was East Elementary School in Spearfish, South Dakota.

Remote site: The classroom where the students were physically in a school setting, but the instructing teacher was not in the classroom. The remote site for this study was Wolf Creek Elementary School in Pine Ridge, South Dakota.

The V-tel system is the brand name of the video conferencing equipment used to connect to the Digital Dakota Network (DDN). Sessions or bridges refer to the time when the host and remote site were in conference. All students participating in the process were considered distance learners.

Participants

The remote site for this study was identified from a listing of South Dakota schools having the availability of distance education equipment within their building. Wolf Creek Elementary houses kindergarten through eighth grades, therefore they are a middle school and received the equipment and infrastructure for utilizing the Digital Dakota Network for distance education. Upon request, the host site volunteered to participate in the study. The distance education equipment for the host site was located at a middle school, which is across town from their elementary classroom. Parent drivers were recruited to transport students to and from the video conferencing sessions while the remote site had access to the conferencing equipment within their school building.

The host and remote sites are approximately 160 miles apart. All student participants were enrolled in the fourth grade. The host site had twenty-five students participating in the collaborative classes while the remote site had seventeen students.

The ethnicity of the host site fourth grade class was predominantly Caucasian and the ethnicity of the remote site fourth grade class was predominantly Native American. However, culture was not considered a factor in this study.

All students at both sites participated in the study, regardless of academic ability or special needs. Informed consent was obtained from parents and guardians of the students for participation after the research study was fully explained prior to its implementation.

Instructors for both fourth grade classes had a minimum of at least fifteen years of experience in the traditional face-to-face instructional classroom. Yet, neither had used video conferencing before or were trained in the use of equipment necessary to facilitate the sessions. A lab instructor or technology coordinator was involved at both sites to prepare the class sessions for video conferencing and to ensure the distance education equipment was working properly. The technology specialists also participated in the

instruction of lessons as well as recording classroom observations, and maintaining a descriptive journal to record their impressions and insights as the study progressed.

Collaborative Lessons

Students introduced themselves during the first session. Student creativity and spontaneity surfaced early in the distance education project. They interviewed each other and introduced their classmates from their interview notes. Topics for further study were generated by questions asked by students at both sites. Some of the information students wanted to know about the other school and community were:

What does your classroom look like?
What do you do for science?
What do you have on your playground?
Do you have PE?
Do you have a Taco John's in your town?

The format for the collaborative distance class was informal to encourage students research and present information about their respective schools and communities in response to questions asked by each fourth grade class. Threlkeld and Brzoska (1994) reported that distance learners require support and guidance to make the most of their distance learning experience. During this study, student participants at both sites received support from classroom teachers, administrators, parents, media and college student participants. Adult participants were grouped with students to accomplish the lessons and to help students become familiar with the distance education format.

This action research project was guided by the following overarching question: How do elementary students respond to distance education and the use of videoconferencing instruction? Specifically, students were asked:

What did you like about the videoconference sessions?
What did you not like about the videoconference sessions?
What did you learn about the other students and their school and community?

Data Collection

According to Sagor (1992), a researcher should not rely on any one, single source of data, interview, observation or instrument. Therefore, this study used three different methods to collect data: observations in the video conferencing classroom, student interviews and a participant survey. Observations in the video conferencing classroom focused on student discussion, student interaction, and student body language. (See Figure 1)

Student participants were interviewed randomly throughout the study. Such questions included,

What are you learning?
What things are difficult or frustrating?
What did you like best about going to the V-tel classroom?
What new thing did you learn today?
What would you like to change about the telecommunications?
Would you like to do a telecommunications project like this again? (See Figure 2)

An online survey was administered to all participants and observers in the study addressing their attitudes toward using distance education as a teaching/learning strategy. (See Figure 3)

Data Interpretation

The approaches used for data interpretation were concept mapping and key questioning. These techniques according to Stringer (1996) enable the researchers to extend their understanding of the problems, contexts and situations. Such concept maps help researchers visualize major concepts and themes that have emerge from the study.

Administrators' Observations

Administrative observations concerning the process of using video conferencing with elementary students included the following:

- Students were engaged, attentive, motivated and on task when they presented to their peers using real time video. It was an engaging medium.
- Traditional instructional approaches such as the use of KWL charts worked well in preparing students for the real-time experience.
- Students and teachers appreciated the need to be prepared for the on-line time. They realized that you just can't 'wing it'; instructors needed to have an agenda. The online time was a good culmination and presentation experience for students.
- Students needed to understand the rules for speaking online. The formality that the technology limitations put on the interactions was positive, as it taught children the importance of taking turns and listening carefully.
- Students were able to learn about one another's lives and communities. Students learned that we are not all that different from our neighbors and that we share many common interests.
- Video conferencing as an instructional strategy at the elementary level is a very appropriate tool that teachers can use. The technology is still not as transparent as it needs to be, but these early efforts are indicating to me that this is a methodology that needs to be expanded.

Conclusion

The question guiding this study was, how do elementary age students respond to the use of video conferencing techniques? The data from the study suggests a favorable learning experience for the elementary students. Specifically….

- Students learned to ask relevant questions.
- Students gained presentation skills necessary to provide relevant and pertinent information in response to specific student questions.
- Students developed an appreciation for differences in teaching philosophies and instruction.
- Students discussed their distance education experience with non-participating classmates.
- Students acquired knowledge in the use of distance education equipment and techniques.

- Students gained understanding of other students and teachers.
- Students applied knowledge from this experience to new situations.

Students never complained about the disruption in their regular school day to participate in the video conferencing sessions. They were always excited and ready to present! In addition, their knowledge of their school and community was outstanding as they fielded questions from students at either site.

As the educational literature presented, a major concern in distance education is the level of student engagement during the video conferencing sessions. The instructing teacher was responsible for maintaining interaction and engagement at both sites during instruction. That was not a problem with these fourth grade students. They brought their own level of interaction and engagement!

Student behaviors were similar to student behavior in the regular classroom. The disruptive students were still disruptive, but observers noted they were less disruptive in the new learning environment. The relationship between the instructor and the students in this study was very similar to the regular classroom relationship. Students were called on by name at both the host and remote site by the teacher, and they raised their hands (most of the time) to ask questions and gain permission from the teachers. Furthermore, students at both sites wanted to continue the conferencing sessions and eagerly came up with new ideas to explore about the other site! However, host site teacher participants were not as eager to continue because of the transportation issue for the students.

Implications of the Study

Given the findings of this study, future applications of distance education with elementary students appear to have a promising future. The collaborative project was a rewarding experience for all participants: the students, the parents and the teachers. The teachers involved acquired a wealth of experience in using video conferencing, and are excited to try another collaborative project. As elementary teachers experiment with using distance education with their students and gain more confidence with the new delivery method, distance education should be considered a viable method of instruction for younger students.

Presently the availability and accessibility of distance education equipment for elementary classrooms in South Dakota limits the use of the Digital Dakota Network. Because the distance equipment was placed in middle schools and high schools, younger students generally have to travel to participate in such distance education opportunities.

The three administrators who participated and observed in one or more of the sessions expressed favorable comments regarding the use of video conferencing for elementary students to collaborate. They found the experience to be more than *fun and games*; it was educational!

Recommendations

As a result of this action research project, the following recommendations are offered:

1. Teacher pre-service and in-service programs need to include training in distance education technologies.

2. Research studies need to be conducted to identify the most appropriate instructional strategies for younger students. More research needs to be done to determine content selection to best promote higher learning for younger students.
3. Technology budgets for school districts need to include the purchase of distance education equipment for elementary schools.

References

Brooks, D. M., & Woolfolk, A. E. (1997). The effects of students' nonverbal behavior on teachers. *The Elementary School Journal*, 88, 51-63.

Fitzpatrick, R. (2001). *Is distance education better than the traditional classroom?* Retrieved July 31, 2001 from http:// www.clearpnt.com/accelepoint/articles/r_ fitzpatrick_060101.shtml

Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology*, 29 (2), 75-91.

Kelly, M. (1990). Course creation issues in distance education. In *Education at a distance: From issues to practice*. (p. 77-99) Malabar, F. L.: Krieger.

Mills, G. (2000). *Action research: A guide for the teacher researcher*. Library of Congress. pp. 48-50.

Mottet, T. P. (1998a, March). *Teaching from a distance: "Hello, is anyone out there?"* Paper presented at the University of Pennsylvania's 19th Annual Ethnography in Education Research Forum, Philadelphia, PA

Sagor, R. (1992). *How to conduct collaborative action research*. Alexandria, VA: Association for Supervision and Curriculum Development.

Souder, W. E. (1993). The effectiveness of traditional vs. satellite delivery in three management of technology master's degree programs. *The American Journal of Distance Education*, 7 (1), 37-53.

Stringer, E. T., (1996). Socially responsible educational research: Linking theory and practice. In D. Flinders, & G. E. Mills (Eds.), *Theory and concepts in qualitative research: Perspectives from the field* (pp. 141-162). New York: Teachers College Press.

Swan, M. K., & Jackman, D. H. (1996, December). *Student perceptions towards effectiveness of distance education.* Paper presented at the American Vocational Education Research Association, Cincinnati, OH.

Threlkeld, R., & Brozoska, K. (1994). Research in distance education. In B. Willis (Ed.), *Distance Education: Strategies and Tools*. Englewood Cliffs, NJ: Educational Technology Publications, Inc.

Verduin, J. R., Jr. & Clark, T. A. (1991). Distance education: The foundations of effective practice. San Francisco: Josey-Bass.

Wilkes, C. W., & Burnham, B. R. (1991). Adult learner motivations and electronics distance education. *The American Journal of Distance Education*, 5 (1), 43-50.

Figure 1: Observations from the video conferencing classroom, data from teacher observations and student interviews or student journaling.

What students liked about the video conferencing sessions-	What students did NOT like about the video conferencing sessions-
Meeting new kids	Being 'very' quiet in the V-tel classroom
The 'special' feeling associated with being in a project where not all are included	Not always being able to hear the students at the remote site
Traveling to the high school for the sessions	
Seeing yourself on the monitor screen	
Presenting the information to the remote site. It makes us feel important and smart.	
Taking turns with the students at the remote site	
Learning about another school	
Time 'out' of regular classroom	
Everyone had a chance to present information to the remote site	

Figure 2: This table represents observations made by students or information gathered from interviews with an adult participant.

Students perception of their learning Q. What did you learn about the other students, their school and their community?		
Spearfish has more people than Pine Ridge.	Our school days pretty much the same.	Both Spearfish and Pine Ridge have a Taco John's.
Both towns have interesting people in the communities.	Both schools use the gym for the lunchroom.	Wolf Creek students have the videoconference equipment right in their school.
Both classroom teachers make the students spell words correctly.	Spearfish students have a computer lab to go to and they go to the lab two times a week.	Spearfish has a special hands-on way to learn science.
It is fun to spelling games against one another during the V-tel sessions!	Spearfish and Pine Ridge are about 160 miles away from one another.	Spearfish is in the northern part of the state, in the Black Hills and Pine Ridge is in the southern part of South Dakota.

Figure 3: On-Line Survey Results

1. Type of Participants Responding		
• Adult	6	
• Student	39	
	Yes	No
2. Did you enjoy going to the V-tel room for the bridges?	93%	7%
3. Would you rather have stayed in your classroom to do your regular work?	16%	84%
4. Would you like to do a project like this again?	91%	9%
5. Did you tell your family and friends about the project?	84%	16%
6. Did you learn something new about the other school?	100 %	0%
7. Did you learn something new about the other community?	100 %	0%
8. Did you learn something new about the other students?	100 %	0%
9. Was the project TOO much extra work?	4%	96%
10. Did you enjoy using the technology this way?	98%	2%
11. Did you involve parents or other people in the project?	80%	20%

1. The part I liked best was (sample answering):
   - ✔ Meeting other kids
   - ✔ Being excited
   - ✔ Using PowerPoint presentations to show our school
   - ✔ Asking the other students questions
   - ✔ Answering the questions from the students
   - ✔ Seeing myself on the screen
   - ✔ Interviewing our principal
   - ✔ Playing spelling games

12. Other comments (sample answering):
   - ✔ I want to visit more.
   - ✔ I would like to bring my Gramma to talk on the DDN.
   - ✔ Can we do this again?
   - ✔ I would like to visit Wolf Creek School.
   - ✔ I would like to visit Spearfish someday.
   - ✔ I think I learned.