Enhancing Effectiveness: A Framework for Compressed Video Instruction

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This article opens with a series of questions related to educating teachers using distance delivery through compressed video: What is distance education? Why is it needed? Are students successful and satisfied with distance education? Then, the article proposes a framework for distance education with compressed video that instructors can use to meet students’ needs. The framework contains several components. Prerequisites are needed, such as time and training for instructors. Instructors need to possess personal qualities: flexibility, a sense of humor, and creativity. They also need to develop a number of knowledge bases in two categories: preparation and teaching strategies. These knowledge bases are described and implementation strategies are provided. The article closes with a discussion of the teacher education strategies of constructivism and modeling as they are applied to enhance students’ success using the compressed video framework.

Enhancing Effectiveness: A Framework for Compressed Video Instruction

The purpose of this article is to propose a framework for distance education using compressed video that instructors can use to meet students’ needs. The framework is based on a review of the literature, infused with the authors’ experience. The framework recommends specific strategies for instructors to employ in preparation and teaching.

Why propose a framework for distance education as it relates to compressed video instruction? Distance education is an alternative approach to teaching and, as such, deserves attention as a form of classroom practice. Like any practice, there are some strategies that work better than others. For example, in this medium, how can instructors
enhance students’ success? Given that technology is involved, are there specific prerequisites needed for this type of instruction? Which strategies work best? What are some strategies that apply to teacher educators? These questions and more are answered in this article, beginning with a definition of distance education.

What Is Distance Education?

Distance education is an alternative method of education to the traditional model where instructors teach students in one specified location. With technology, instructors can now conduct classes at one location, with the students physically separated from the teacher at other multiple locations (Mielke, 1999). Distance education takes the form of many different media—compressed video, audio, and computer instruction. The focus of this article is compressed video, and it is defined as a mechanism for instruction that combines two-way televised transmission, audio, and emerging technologies (Reed & Woodruff, 1995).

Why Is Distance Education Needed?

If students can be successful in the traditional setting, why do we need distance education? This question can be answered from two points of view: the university and the student. For the university, there are many advantages. Distance education allows universities to stay competitive in an age of rapidly changing technology. Distance education has economic advantages; for example, increasing course enrollments for viability. Further, it addresses space concerns and thus can increase efficiency (Chapman, 1996; Irani, 2000). However, simple distance education offerings are not enough. Irani (2000) suggests that universities “revise their marketing philosophy with respect to
looking at their students as discriminating consumers of higher education” (p. 10). The institutions must address students’ needs.

What are those student needs? Distance education can address students’ personal life needs such as scheduling convenience, avoiding long distance driving, and providing access from rural areas (Chapman, 1996; Paulsen, Higgins, Miller, Strawser, & Boone, 1998; Stone & Saulino, 1997). Furthermore, students’ academic needs also can be addressed, such as their quest for quality in course work (Paulsen, et al., 1998), their desire for choice and input in courses (Irani, 2000), and the extension of their curricula beyond traditional methods (Stone & Saulino, 1997). In other words, today’s students are discriminating consumers, technology savvy, and want more from their distance education courses.

Are Students Successful and Satisfied with Distance Education?

The literature indicates that students are as successful in distance education classes as in traditional classes (Biner, et. al, 1996, Biner, Barone, Welsh, & Dean, 1997; Paulsen, et. al, 1998; Simonson, Smaldino, & Albright, 2000). However, students’ satisfaction is contingent on a number of factors. The literature indicates that they need prompt feedback and seek quality preparation and delivery in course work (Biner, et. al, 1996; Biner, et. al, 1997). Furthermore, the organization, management, and support services offered for their courses are critical to their satisfaction (Simonson, et. al, 2000).

Framework Development

The authors developed the framework proposed in this article via a several step process. First, an extensive review of the literature on compressed video in distance education was conducted. The literature accumulated was organized, read, and
categorized. Meta-cognitive strategies were employed to identify themes. Then, the authors used the themes to develop the conceptual framework for distance education with compressed video. Next, the authors coupled their experience with these themes to generate strategies and/or best practices for implementation that instructors can use to meet students’ needs.

Instructors’ Prerequisites

In order for university instructors to meet their students’ distance learning needs, prerequisites are required. First, instructors need training to learn about equipment, time for that training, and additional time to develop competence with the equipment (Chapman, 1996; Schoenfeld-Tacher & Persichitte, 2000). Second, to insure the quality of course work demanded by technologically savvy students, instructors need intensive amounts of time for course development (Biner, et. al, 1996; Paulsen, et. al, 1998; Schoenfeld-Tacher & Persichitte, 2000). It is important to note here that the time instructors spend on these first two prerequisites are essential to success, since this time is more than what would normally be spent on traditional instruction. Finally, in the case of compressed video, there is a need for site facilitators (Chapman, 1996) whose duties include vital tasks such as helping with equipment at local and distance locations, proctoring exams, and collecting and mailing materials at distance locations.

The remaining issues that instructors must address fall into two domains of teaching effectiveness: personal qualities and knowledge bases (Arends, 2004). The subsequent sections of this article address these domains.
Instructors’ Personal Qualities

The most important characteristic for successful distance education instruction is flexibility (Chapman, 1996; Schoenfeld-Tacher & Persichitte, 2000) (see Table 1). In the context of compressed video, flexibility means adapting to the situations that arise when teaching. This flexibility includes the instructor’s willingness to change teaching strategies to meet students’ needs so that they can be successful within this medium of instruction. The need for flexibility may arise in a number of areas, such as ambient noise, the distribution of course materials at multiple sites, or the limitations of only one camera.

There are a number of other course related parameters where flexibility is important. Depending on the size of the class and the number of course sections being taught simultaneously via compressed video, instructors need to be flexible with things such as scheduling, course content sequencing, assignment modifications, or rearrangement of group activities. Addressing these issues assists in accommodating students’ learning styles and provides time for students’ processing of information and reflection on learning.

The second important personal quality for instructors is a sense of humor (Comeaux, 1995; Simonson, et al, 2000) (see Table 1). When all else fails, laugh! If instructors have a sense of humor about equipment failures, delays, or other compressed video problems, the students will as well. Additionally, instructors can apply a sense of humor with energizers (see Ukens, 2000) for students in class or in follow up correspondence via email after class by using ☺ smiling emoticons.
Finally, creativity (Schoenfeld-Tacher & Persichitte, 2000) is essential for successful distance education teaching (see Table 1). Material that would normally be presented in a simple lecture format requires the use of strategies such as advance and graphic organizers (Arends, 2004; Hyerle, 1996). Other creative techniques must be used, such as dynamic PowerPoint slides. Instructors must employ questions to extend students’ thinking, promoting higher levels of cognitive processing about the material taught (Arends, 2004; Reed & Bergemann, 2001). Although these best practices are recommended for use in the traditional classroom, it is essential that instructors use them to capture and hold the attention students’ attention in the compressed video environment. The instructor must compensate for the lack of physical presence in the classroom as an attention motivator.

Additionally, these creative techniques provide instructors with the opportunity to scaffold learning for students, thereby helping them to construct knowledge. Scaffolding allows instructors to support students’ learning in a given task, gradually withdrawing that support as students increase their accomplishment (Wink & Putney, 2002). For example, by providing a graphic organizer, such as a Venn diagram as part of a dynamic PowerPoint presentation, instructors can scaffold students’ learning and challenge them to higher levels of cognitive processing about the material being presented (Arends, 2004). Further, using these best practices such as scaffolding, graphic organizers, and dynamic PowerPoint presentations, provide modeling of effective teaching for preservice and inservice teachers as they learn via compressed video.
Instructors’ Knowledge Bases

There are eight knowledge bases proposed by the authors as essential to enhancing distance education with compressed video. They fall into two categories: Preparation and Teaching Strategies (see Table 2).
Domain II: Teaching Strategies

Knowledge Base 5: Verbal and Nonverbal Presentation Skills
Knowledge Base 6: Questioning and Interaction Strategies
Knowledge Base 7: Communication with Students to Build Community
Knowledge Base 8: Feedback

In the category of Preparation, the first area is Learning Theory and Research as it relates to compressed video instruction (see Table 2). Instructors must understand learning theory and research (Cyrs, 1997; Schoenfeld-Tacher & Persichitte, 2000), such as adult learning, motivation, persistence, and self-paced instruction. Knowledge of learning theory and research gives instructors a foundation from which to operate. For instance, knowledgeable instructors are aware that, sometimes in distance education, institutional barriers to student persistence exist, such as course scheduling and pacing (Rubenson as cited in Simonson, et. al, 2000). Having knowledge of such barriers beforehand allows instructors to plan and execute a course with the flexibility required to address students’ needs, thereby allowing the students to persist and be successful in the course.

The second area in the knowledge base category of Preparation is Instructional Design Strategies (see Table 2). Instructional design strategies are critical to enhancing distance education courses, particularly for teacher education (Cyrs, 1997; Paulsen, et. al, 1998; Schoenfeld-Tacher & Persichitte, 2000). First, instructors need to present
content/theory, scaffolding students’ learning. Then, they need to “provide more opportunities for students to discuss the content with others, resulting in quantitatively and qualitatively improved cognitive processing” (Slavin, 1996, ¶7). This discussion process allows for students to negotiate the meaning of what they have learned, construct new knowledge, and then, with the guidance of their instructors, apply that knowledge. For example, in the case of teacher education, the students apply the knowledge to their experiences in the classroom with children. Subsequently, discussions via compressed video can allow for processing of the discrepancies between the ideal content/theory, the realities of the classroom, and the reconciliation of the discrepancies found between the two. These discussions promote students’ full integration of their new learning and their abilities to process information at higher cognitive levels. Hence, students both use and see modeled the constructivist approach to instruction, one that is considered as central to distance education (Rakes, Flowers, Casey, & Santana, 1999; Schoenfeld-Tacher & Persichitte, 2000).

The third area in the category of Preparation is Planning and Organization, a critical part of enhancing distance education (Mielke, 1999; Schoenfeld-Tacher & Persichitte, 2000) (see Table 2). Instructors must reorganize their course materials. Nothing can be done at the last minute, as the success of subject matter or content presentation depends largely on the graphics created via technology for compressed video instruction. Additionally, instructors must concisely summarize the thoughts that they would normally communicate in an oral lecture, saving them as files or documents that they distribute to their students in advance. The result is a higher quality course.
The final area of Preparation that enhances distance education instruction is that instructors must be Subject Matter Experts (Hegarty, Phelan, & Kilbride, 1998; Schoenfeld-Tacher & Persichitte, 2000) (see Table 2). Given the many intricacies of distance education using compressed video, this method of instructional delivery is best used by one who has mastered their content area. Since content must be synthesized to enhance effectiveness, the subject matter is something that must be well known. Furthermore, novice instructors may still be working on gaining mastery of basic teaching strategies; therefore, they may not be prepared to adapt these strategies for success in distance education.

The next four knowledge bases relate to Teaching Strategies: Verbal and Nonverbal Presentation Skills, Questioning and Interaction Strategies, Communication with Students, and Feedback (see Table 2). Verbal and nonverbal presentation skills refer to the same set of effective teaching behaviors used in the traditional classroom, such as good voice tone and modulation and appropriate body language (Arends, 2004; Cyrs, 1997; Hegarty, Phelan, & Kilbride, 1998). However, with compressed video, slight facial expressions might not be picked up at the distance site, so dramatic and enthusiastic gestures may be more successful. On the other hand, students who might be physically present in the same room may be overwhelmed. Hence, there’s a delicate balancing act just in delivery of the instructional message!

Questioning and interaction strategies should challenge students to the highest possible level of thinking, and they are equally as essential to students’ academic success (Cyrs, 1997; Mielke, 1999; Schoenfeld-Tacher & Persichitte, 2000). However, it’s the interaction strategies that create a real challenge for the compressed video classroom.
Once a question or problem is posed, how do you conduct a discussion across compressed video sites? Establishing norms and rules for participation are important, such as requiring students to raise their hands. Using appropriate equipment and asking students to speak so they make eye contact with everyone in the room—including the camera—assists as well. Modeling immediacy behaviors such as “frequent positive encouragement” and “sharing personal examples” (Simonson, et. al, 2000, p. 61) are helpful. These strategies also help with the next important knowledge base, communication.

Particularly important in distance education is communication to build a supportive community (Downs & Moller, 1999). A caring community in the classroom has been recognized as essential to students’ success (Agne, 1992; Garcia, 1992), but attaining that same environment via distance education can be a challenge (Downs & Moller, 1999). To compensate for the lack of face-to-face, in-person communication that promotes a supportive community, “Community Builder” activities can be adapted for use in distance learning (see Shaw, 1992). Dealing with technology issues early on can also assist with communication. For example, strategic placement of microphones and having students work toward reducing ambient noise (e.g., rustling papers) also facilitates effective communication.

The final teaching strategy is feedback (Biner, et. al, 1997; Hegarty, Phelan, & Kilbride, 1998). Students need and appreciate immediate feedback on their performance in order to be successful and satisfied. However, feedback is more than correcting and returning student work in a timely manner. Students perceive feedback as an indicator of justice and fairness. Justice and fairness can be handled via syllabi policies and rubrics.
Addressing accessibility and availability may mean that individual videoconference times must be arranged, more frequent travel to the distance site must occur, or that regular email and telephone conferences are used in lieu of face-to-face contact.

Summary

This article proposes a framework for compressed video instruction. Based on a review of the literature infused with the authors’ experience, the framework recommends that specific prerequisites, personal characteristics, and knowledge bases are required. The prerequisites for instructors who teach using compressed video follow. Instructors must be provided with time for training and planning. There is a need for site facilitators to support instructors. Additionally, the framework proposes that instructors should possess the personal qualities of flexibility, humor, and creativity.

There are eight knowledge bases in two domains in the framework. In the first domain, preparation, there are four areas. The first is knowledge of learning theory and education research. Second, instructional design strategies are critical to enhancing distance education courses. Third, planning and organization are important. The fourth area in preparation is being a subject matter expert. The second domain relates to teaching strategies. These strategies are verbal and nonverbal presentation skills, questioning and interaction strategies, communication with students, and feedback.

Each area of the framework describes strategies that can be used to facilitate students’ success. Some of these strategies are specific to compressed video technology, while others are adapted from the traditional classroom and are based on effective teaching. In either case, the application of the strategies recommended within the framework is essential to successful instruction using compressed video.
“Although…the technology…removes barriers and expands opportunities for learning, it is the teacher who teaches” (U.S. Congress, 1989, p. 11). However, in “distance learning, teachers find that they are required to change their method of teaching” (U. S. Congress, p. 11). This quote summarizes the need for the framework for teaching using compressed video: teachers must alter their methods. As discussed previously, to insure success with these altered methods, the framework suggests two domains which promote teaching effectiveness accompanied by recommendations for teaching strategies. Also important are the prerequisites, as they provide the support for the teacher/instructor to make the changes needed in planning and teaching.

Implications for Teacher Educators

Following the framework presented in this article and the strategies suggested therein, teacher educators can insure the success of their students, preservice and inservice teachers, when using compressed video. Although most of the strategies supplied in the framework, may be universally applied to instruction, two connections particular to teacher education are briefly discussed here.

First is constructivism. It is a central tenet of distance education (Rakes, et. al, 1999; Schoenfeld-Tacher & Persichitte, 2000). Interestingly, since the numerous calls for reform to education in the 1990’s, there has been a resurgence of the constructivist philosophy in teacher education (Lowenbraun & Nolen, 1998). So, there is a natural philosophical connection between distance education and teacher education.

Given this connection, how does constructivism for teacher education appear in the distance education for compressed video framework? Teacher educators using the framework apply the constructivist approach of scaffolding learning. One example of this
application is through the best practices of graphic organizers and advance organizers that are so essential for hooking and holding students’ attention. Further, questioning strategies can help to scaffold learning for students. The challenge is to structure the ensuing discussion to enhance interaction using the tips provided in this article. Albeit, many of these strategies may be applied in a traditional classroom to scaffold learning; however, for the teacher educator using compressed video employing them is essential for success in delivery using the medium.

Modeling, the second theme, is a strategy that goes hand-in-hand with constructivism and determines students’ success (Hudson-Ross & Graham, 2000). For instance, “Modeling specific instructional strategies in teacher education courses has the potential to influence both skill level…and attitudes…and future teachers” (Allinder, 2001, p. 1). When teacher educators apply the framework for distance education in their instruction, they model many of the personal characteristics and teaching strategies suggested in the literature on teacher effectiveness (see Stronge, 2002). For example, teacher educators’ use of the constructivist approach of scaffolding may encourage preservice and inservice teachers to employ the technique with their students. Further, teacher educators’ modeling of immediacy behaviors in communication allows preservice and inservice teachers the opportunity to see the skill modeled before practicing it themselves. Then, with practice in the compressed video environment, preservice and inservice teachers may be more apt to replicate these skills in their own classrooms.

With the application of constructivism and modeling, teacher educators can use strategies from the framework for compressed video to enhance students’ success. It is important to note here that the authors are not recommending that compressed video
replace other forms of instruction for preservice and inservice teachers. It is simply seen as another method for teacher educators’ repertoires of instruction.
References


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