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Improving the Asynchronous Video Learning Model

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Abstract

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Online education is popular from a consumer perspective, but there are elements of face-to-face instruction and assessment that are difficult to reproduce online (Bassoppo-Moyo 2006). The difficulty of reproducing valued elements of a face-to-face setting leads to concerns regarding the overall quality of the online learning experience. Videoconferencing is one technology that has been used to incorporate elements of a face-to-face environment. However, videoconferencing over the Internet is fraught with technical difficulties and live discussions remove one of the main benefits of distance education: time flexibility.

A more recent development has been to use asynchronous video as a communications method in online courses. Griffiths and Graham (2009) described several pilots using asynchronous video in online courses at Brigham Young University. Asynchronous video conveys the verbal and nonverbal signals necessary for immediacy and social presence and retains the time flexibility benefit of distance education. Following the pilot studies, a prototype design theory titled the Asynchronous Video Learning Model (AVLM) was created for the use of asynchronous video in online courses.

A study was designed to study a practical implementation of AVLM. The major purpose of the study was to observe and analyze the practical experiences of participants and improve the AVLM model. A class named IPT286 (Using Instructional Technology in Teaching) taught by the department of IP&T at BYU was redesigned to be an online class using AVLM. Data were gathered during the semester and then analyzed according to the methods described in this study.

Results showed that many of the principles of the AVLM model were successfully implemented and led to positive experiences. Some elements of the model were not adequately implemented which led to some negative experiences. In addition, experiences led to new elements being added to the model. The study also revealed some interesting principles related to general learning theory. The data consistently revealed the importance of relationships in the learning process. Relationships between students and the instructor were shown to influence the student learning experience, and therefore the personality and style of the instructor impacted overall student learning to some degree.

Keywords: asynchronous video, asynchronous video learning model, online teaching, video-mail, distance education, distance learning.

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Chapter 1: Introduction and Problem Identification

In our modern, flexible, and tech-savvy culture, there is an ever-increasing array of educational opportunities in the realm of higher education. Online education continues to be one of the largest growth areas in this dynamic learning arena. The following statement describes the extent of the increase in the popularity of online courses:

> The number of students taking at least one online course continues to expand at a rate far in excess of the growth of overall higher education enrollments. The most recent estimate, for fall 2006, places this number at 3.48 million online students, an increase of 9.7 percent over the previous year. (Allen and Seaman, 2007, p. 1)

As the demand for online education increases, so does the need to innovate and improve online instructional methods and materials. More and more traditional institutions of higher education now offer online courses. Educational researchers are faced with questions about how the online courses compare with a traditional face-to-face experience, and how the valuable elements of the face-to-face experience can be reproduced or replaced in an online setting. Online courses offer many benefits to students, including economy and flexibility in the time constraints and location of the learner. Online education is popular from a consumer perspective for these reasons and others, but there are elements of face-to-face instruction and assessment that are difficult to reproduce online. The difficulty of reproducing some of the valued educational elements that exist in a face-to-face setting in an online environment leads to concerns about the overall quality of the online learning experience. Bassoppo-Moyo (2006) described some of these concerns from the perspective of testing and assessment in an online environment:

The issue of online testing and assessment has always presented problems, especially

when one considers the pervasive absence of face-to-face interactions that are the

cornerstones of traditional education. Generally, in addition to proctored tests and other

measurement instruments, face-to-face interactions enable teachers to use informal

observation techniques to gauge student response, obtain feedback, and progress toward

prescribed goals. (p. 8)

Many educational developers have attempted to bring these face-to-face interaction

cornerstones into the online world through audiovisual technologies. Live streaming video is one

audiovisual technology that has been an expanding area of exploration. The rate of

implementation and the availability of high speed Internet connections have opened up the

potential for live or synchronous video streaming over the Internet. Computers and webcams are

now relatively inexpensive products and it would seem that the time is right to capitalize on the

potential of live streaming in online education. However, there are still several issues in the

implementation of live video streaming in education that need to be addressed. First, a live

experience removes time flexibility, one of the largest benefits of online education. Second,

many different technical issues exist that make it difficult to guarantee a good quality experience

for learners. In any group of learners there can be diverse Internet connection issues, personal

computer hardware, software, and setup problems. Added together, these problems cause

learners at different times to have a poor quality experience, or to miss the experience altogether.

Another audiovisual technology that may be a part of the solution is asynchronous (pre-

recorded) video communication. Asynchronous video takes advantage of the same Internet

infrastructure and personal computer availability as live video streaming but does not suffer from

the same problems. Video-messages are recorded before they are sent over the Internet. If the

Internet connection is slow, then a video-message will simply take longer to send or can be resent later. As these video-messages are recorded, the time flexibility benefit of online learning is retained as an instructor or a student can record a video-message at any time. The receiver of the message can also view a video-message at any time according to his or her own schedule and availability. While these asynchronous video-messages do not allow for spontaneous two-way discussion, they do convey many of the verbal and nonverbal elements associated with human face-to-face conversation.

Some portion or essence of the face-to-face interaction is available through asynchronous video communication. Based on several pilot implementations, a model has been formulated for the use of asynchronous video. The new model is entitled the Asynchronous Video Learning Model (AVLM). AVLM has been designed so that an online learning environment can reproduce or convey the elements of social presence and immediacy/closeness that are valued so highly in face-to-face education. Social presence is a concept that forms part of the Community of Inquiry Framework. Social presence is defined by the three main constructs of affective expression, open communication, and group cohesion. These three constructs are mostly used to represent the quality of experiences between students in a learning environment. Immediacy/closeness is another construct used mostly to represent the experiences between instructor and students. Immediacy/closeness is defined in this study as the verbal and nonverbal signals normally achieved in face-to-face communications between instructor and students that establish a close and trusting relationship. When immediacy/closeness is present, students know their instructor and feel that they are known. Students seek support, receive personal and meaningful feedback, have a sense of well being, and are motivated in a positive way.

Statement of the Problem

Online education has many benefits, but lacks the richness and dynamism of communication that is present in a face-to-face classroom. Audiovisual communication technologies can deliver elements of verbal and nonverbal face-to-face communication, but attempting to recreate a live face-to-face situation via the Internet holds many technical challenges and removes the time flexibility that is such an important benefit for online learners.

An innovative way needs to be found that takes advantage of the affordances of Internet-based audiovisual technologies and allows as much of the classroom experience as possible to be delivered to learners at a distance without compromising the flexibility of time and location that online consumers demand. Innovations need to reduce the levels of technical difficulties that detract from a positive learning experience. To address these issues, pilot studies have been conducted at Brigham Young University (BYU) using asynchronous video to bring social presence and immediacy/closeness to online learning. The experience of using asynchronous video in pilot classes has resulted in the formulating of a design model entitled the Asynchronous Video Learning Model (AVLM).

The problem that this study addresses is that although the Asynchronous Video Learning Model has been designed to bring some portion of the richness of face-to-face communications into an asynchronous distance learning environment, the model is new and developed based on pilot situations. AVLM needs to be implemented in a new case where it can be more thoroughly tested and scrutinized and where the experiences of participants can be more deeply observed and analyzed.

Purpose of the Research

The purpose of this research is to study an implementation of the AVLM model and its impact on human interactions and relationships in an online learning environment so that an improved and refined model can be presented for wider educational use and for future study. The nature of class relationships and interactions are viewed in this study through the lens of social presence and immediacy/closeness.

Research Questions

In a class based on the AVLM design theory, what are the practical experiences of participants in relation to the constructs of affective expression, open communication, group cohesion, and immediacy/closeness:

1. What do participants view as positive about those experiences?

2. What do participants view as negative about those experiences?

3. What implications are there for the AVLM design theory through analysis of those experiences?

Chapter 2: Review of Literature

The purpose of this review of literature is to examine and discuss research that shows some major differences in instructor–student relationships between face-to-face and distance learning. Another purpose of the review is to examine and discuss potential solutions to bridging the gap in instructor–student relationships between face-to-face and distance forms of learning. The potential solutions include the use of the recently created Asynchronous Video Learning Model. To support the review process, before discussing the strengths and limitations of any particular form of learning, it is first necessary to review general principles of educational practices in the context of higher education. To be able to understand what is good or bad about any model or practice, it is needful to establish a baseline of standards or practices for evaluating the quality of any particular higher education learning experience.

The Seven Principles for Good Practice in Undergraduate Education

One well established set of standards is titled the Seven Principles for Good Practice in Undergraduate Education (the Seven Principles). These standards, published in 1987, were compiled in a study supported by the American Association of Higher Education, the Education Commission of the States, and The Johnson Foundation (Chickering and Gamson 1987). The Seven Principles were designed for the purpose of evaluating the quality of undergraduate education. The Seven Principles can also be used as a guide in the educational design process for undergraduate education. A review of merits and challenges of face-to-face and online learning environments shall be discussed in this study in relationship to the Seven Principles. The Seven Principles are described as follows:

1. Good Practice Encourages Contact between Students and Faculty: Frequent student-to-faculty contact in and out of classes is the most important factor in student

motivation and involvement. Faculty concern helps students get through rough times and keep on working. Knowing a few faculty members well enhances students' intellectual commitment and encourages them to think about their own values and future plans.

2. Good Practice Develops Reciprocity and Cooperation among Students: Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding.

3. Good Practice Encourages Active Learning: Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves.

4. Good Practice Gives Prompt Feedback: Knowing what you know and don't know focuses learning. Students need appropriate feedback on performance to benefit from courses. When getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points during college, and at the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves.

5. Good Practice Emphasizes Time on Task: Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students

and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis of high performance for all.

6. Good Practice Communicates High Expectations: Expect more and you will get more. High expectations are important for everyone: for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts.

7. Good Practice Respects Diverse Talents and Ways of Learning: There are many roads to learning. People bring different talents and styles of learning to college. Brilliant students in the seminar room may be all thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.

Limitations of Online Learning

The propagation of the Internet over the last decade has seen an explosion of online courses offered by institutions of higher education. By 2003, student enrollment in online higher education courses in the U.S. had already reached 2 million (Lee, Nguyen, 2007). Online courses have many benefits that include increased access, improved quality of learning, better preparation of students for a knowledge-based society, and *lifelong* learning opportunities (Appana, 2008). Notwithstanding the ever increasing popularity of online courses, it must be

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recognized that there are also many limitations in their ability to replicate critical features of a normal classroom environment. These features include social interaction, prompt feedback, engaging activities, instructional flexibility, dynamism of a knowledgeable scholar, and adaptation to individual needs (Larreamendy-Joems, Leinhart, 2006). All of these features are major components of the Seven Principles.

It has been shown that certain elements of social interaction (elements of principles one and two of the Seven Principles) can be replicated in some degree through text-based asynchronous learning environments (Rourke, et al. 1999). However, the medium of text does not have the capacity to include the richness of all the senses present in face-to-face human interaction (Graham, 2006). Daft and Lengel (1986) stated that the reasons for richness differences include the medium's capacity for immediate feedback, the number of cues and channels utilized, personalization, and language variety. Daft and Lengel (1986) also stated that face-to-face is the richest medium because it provides immediate feedback so that interpretation can be checked and also provides multiple cues via body language and tone of voice, and message content is expressed in natural language.

Figure 1 shows four dimensions of interaction in face-to-face and distributed learning environments. The left extreme in Figure 1 represents a face-to-face environment for all four dimensions. The right extreme represents an asynchronous online text-based environment with no human interaction. In particular the fidelity dimension clearly shows the difference in sensory experience between the rich, all sense of a face-to-face classroom and the low level of sensory experience that exists in a distributed text only environment such as a text-based online learning environment.

Live
(physical)   Mixed
                   Reality   Virtual

Space ←————————————————————————————————————→

Live Synchronous   Asynchronous
(very short lag time)   (long lag time)

Time ←————————————————————————————————————→

High   Medium   Low
(rich all senses)   (e.g., audio only)   (text only)

Fidelity ←————————————————————————————————————→

High Human   No Human
Humanness ←————————————————————————————————————→
No Machine   High Machine
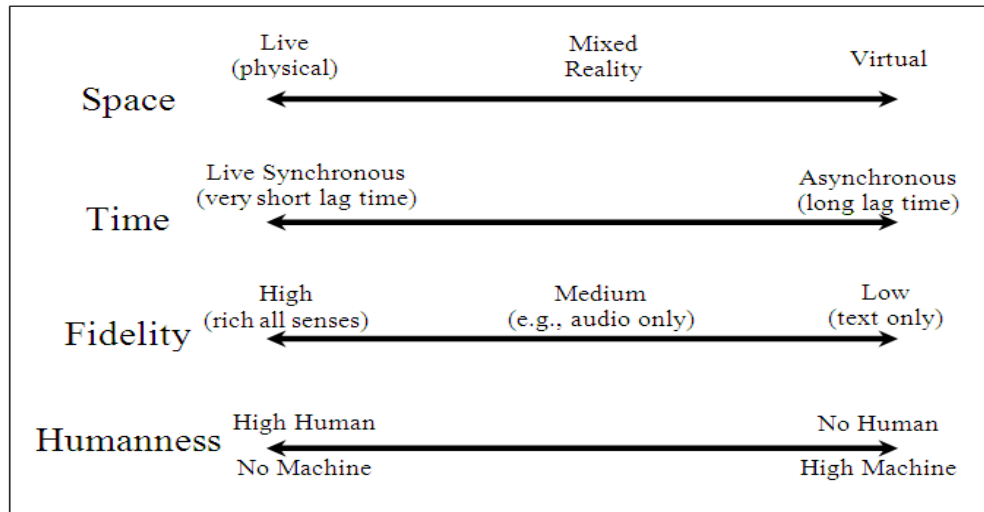
Figure 1. Four dimensions of learning environments (Graham 2006, p.7).

Immediacy/closeness. Social interaction, one of the most obvious limitations of online

learning, has multiple facets that include the individual instructor–student relationship and the

overall learning community that includes the instructor and all other students. The importance of

student and faculty interaction is described in principle one of the Seven Principles. Close social

interaction between teacher and student, one important facet of the overall domain of social

interaction, is often discussed in terms of instructor immediacy. Immediacy has been defined as

"Those communication behaviors, some visual, others vocal that enhance closeness to and

nonverbal interaction with another" (Mebrabrian, 1969, p. 213). Rovai (2001) elaborated that

instructor immediacy is the immediate verbal and nonverbal communications such as smiles,

head nods, use of inclusive language, and eye contact, that promote increased learning. Studies

including Christophel (1990) and Christensen & Menzel (1998) added the distinction that

improved instructor immediacy impacts student motivation that in turn improves student

learning. These studies suggest that immediacy has an indirect rather than a direct impact on

student learning as student motivation directly impacts student learning.

Student motivation. Because it impacts student learning by impacting student motivation, it is reasonable to assume that a high level of instructor immediacy would most likely have the lowest level of impact on students with naturally high levels of motivation. Frymier (1993) concluded that students who began a course with low to moderate motivation to study had increased motivation to study after interacting with a highly immediate instructor in a traditional face-to-face environment, while students with a high level of motivation were not affected by the high level of immediacy.

Because evidence suggests that immediacy between an instructor and a student is correlated to some degree with student motivation, there is a need to investigate the instructor immediacy limitations that exist in online learning. Instructor immediacy includes verbal and nonverbal communications (Rovai, 2001), that are easily transmitted in the close physical proximity of the instructor and student in a face-to-face classroom setting. Online learning environments do not have the same advantages of the close proximity especially the sensory perspectives and perceptions. Due to this dynamic it could be argued that instructor immediacy, and hence increased motivation for students is an unlikely product of a traditional online class. All the elements involved in instructor immediacy and establishing close motivational relationships will be described henceforth in this study as immediacy/closeness.

Community of Inquiry Framework

To measure the capacities and affordances of online education techniques, different theoretical frameworks have been suggested. One of the theoretical frameworks that can be used as a way to identify strengths and weaknesses of online learning environments is the Community of Inquiry Framework. The Community of Inquiry Framework was designed as a way of viewing the overall educational experience with the original objective of observing the strengths and

weaknesses of text-based online education. The framework incorporates three main overlapping

sectors that were perceived as being necessary elements of an educational experience. The three

main sectors are cognitive presence, teacher presence, and social presence (see Figure 2).

Aspects and attributes of text-based online education can be compared and contrasted with the

elements of the ideal educational experience as defined by the three main sectors of the

framework. The designers of the framework described its development:

> To this point, we have identified the cognitive and social elements of a community of
>
> inquiry for educational purposes. To complete this picture, we must add one other core
>
> element to this community. That is the responsibility to design and integrate the cognitive
>
> and social elements for educational purposes. This remaining essential element of an
>
> educational community of inquiry is that of teacher presence. All three elements are
>
> essential to a critical community of inquiry for educational purposes. The elements of a
>
> community of inquiry can enhance or inhibit the quality of the educational experience
>
> and learning outcomes. (Garrison & Archer 1999, p. 91)

The Community of Inquiry Framework was originally presented to the academic

community in 1999. The designers of the framework subsequently spent several years

developing a measurement instrument that was validated and presented at the Sloan-C

conference in 2007. The three main sectors of social presence, cognitive presence, and teacher

presence are further broken into detailed elements and attributes that are measured by the

validated instrument. In the context of this study, social presence is the sector that relates to the

projection of personality and emotion. Social presence is therefore the sector of the Community

of Inquiry Framework that is specifically relevant to this study.

Community of Inquiry
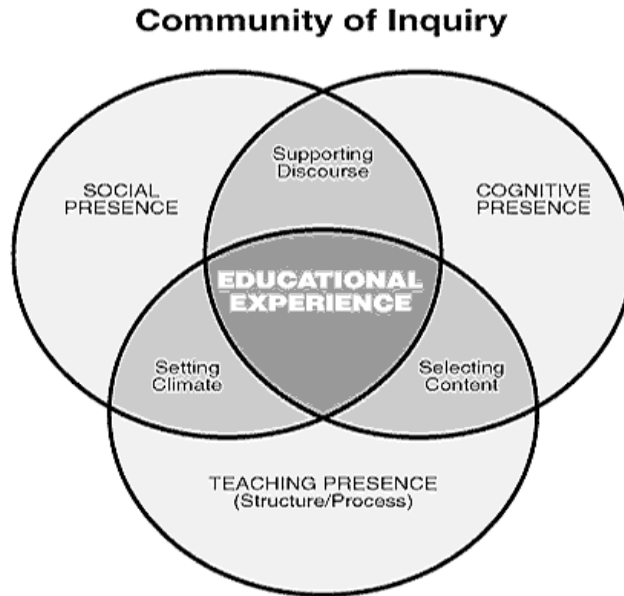
Figure 2. Community of Inquiry Framework (Arbaugh, et al. 2007, p. 5).

Aspects of Social Presence

The Community of Inquiry Framework (Garrison and Archer 2003) situated the principle

of instructor immediacy mostly within the domain of social presence and also in part within the

domain of teacher presence. In the Community of Inquiry Framework, social presence has been

described as "the ability of participants to identify with the community (e.g., course of study),

communicate purposefully in a trusting environment, and develop interpersonal relationships by

way of projecting their individual personalities" (Arbaugh, et al. 2007, p. 4). Social presence has

also been described in the following terms: "Within our model, we define social presence as the

ability of learners to project themselves (i.e., their personal characteristics) socially and

emotionally, thereby representing themselves as *real* people in a community of inquiry"

(Arbaugh, et al. 2007, p. 21). In addition, the expression of emotions, feelings, and moods is a

defining characteristic of social presence as described by Garrison et al. (1999) and research by

Eggins and Slade (1997) suggested that humor is also a strong indicator of social presence. To

summarize, the issue of verbal and nonverbal cues involved in projecting immediacy is discussed in terms of projecting individual personalities, emotions, feelings, moods, humor, and the essence of being real.

According to these descriptions of social presence within the Community of Inquiry Framework, the establishing of social presence in a traditional online setting is not easy to achieve due to the lack of verbal and nonverbal cues and sensory perspectives and perceptions that exist in a close proximal setting. The Community of Inquiry Framework breaks social presence into the three main areas of affective expression, open communication, and group cohesion.

Affective expression. Affective expression deals with the expression and reception of emotions that are associated with or usually expressed and understood in settings of close physical proximity. The expressing of emotions is a fundamental part of creating social connections in face-to-face classrooms. In asynchronous text-based environments the ability to express emotions is reduced or eliminated (Garrison & Archer 1999).

Humor is one area of emotional expression that plays an important role in social presence. The expression of humor has been specifically identified as contributing to social presence. Gorham and Christophel (1990) stated that humor acts as an invitation to start a conversation; it helps to reduce social distance and can convey goodwill. According to Eggins and Slade (1997), the use of humor is linked to critical discourse in that the forming of group cohesion often involves using conversational strategies such as humorous banter, teasing, and joking. Humor can be projected in some forms in text-based conversations, but the nuances of humor that exist in a face-to-face setting are difficult, if not impossible, to correctly interpret without the verbal and nonverbal cues and signals that exist in face-to-face communication.

Self-disclosure involves the revealing of personal information and is another important ingredient in the establishing of social presence. Self-disclosure has been described by Garrison & Archer (1999) as a sharing of feelings, attitudes, experiences, and interests. As a result, it encourages others to be more forthcoming and to reciprocate. Self-disclosure results in increased trust, support, and sense of belonging. Cutler (1995) described self-disclosure in terms of a reciprocal process where individuals are more likely to establish trust, seek support, and find satisfaction the more they know more about each other.

The ability to share information about oneself in a coherent and comprehensible manner is an important part of establishing trusting and productive relationships within a learning community. Text-based communication does have the capacity to convey details of personal information between learners, but is obviously restricted in its ability to communicate all the subtle details of verbal and nonverbal human signals that contain deeper aspects of the meaning, context, background, emotion and so forth that exist in the communicating of personal information.

Open communication. Open communication has been described as reciprocal and respectful exchanges (Garrison & Archer 1999). Examples of open communication are mutual awareness and recognition of each others' contributions. Mutual awareness builds group cohesiveness and includes respectfully attending to and acknowledging the contributions of others. When people know that others are present and are attending to messages, participants can begin to meaningfully correspond in a way that builds mutual awareness. Meaningful correspondence is typically achieved in online learning environments via text-based synchronous and asynchronous discussions.

Mutual awareness is closely related to recognition. Recognition is the process of communication that supports or acknowledges individual contributions. Abouserie (1995) suggested that the approval or recognition of other students within a learning community helps to maintain self-esteem. Explicitly expressing appreciation and agreement as well as complimenting and encouraging others are textual tools for communicating recognition and support. This aspect of social presence is particularly important in a text-based environment, where smiles, eye contact, and other nonverbal means of establishing and maintaining social presence through recognition are not available (Garrison & Archer, 1999).

Group cohesion. Garrison & Archer (1999) stated that group cohesion is exemplified by activities that build and sustain a sense of group commitment. Group cohesion leads to an enhanced level of critical inquiry and a higher quality of discourse when students perceive themselves as part of a group or community of learners rather than as individuals. Another description of group cohesion is the type of collaborative communication that builds participation and empathy (Garrison & Archer, 1999).

Empathy and increased participation are important parts of student interaction, and a cohesive student group can facilitate a synergistic critical thinking environment that leads to an increased sharing of unique and individual knowledge that enhances the overall learning experience of all group members. In more specific terms, knowledge develops as group members utilize unique knowledge and skills of individual members, synthesize diverse viewpoints, and create an integrative understanding of the situation at hand (Mu & Gnyawali, 2003).

Group cohesion in an online setting is desirable for the establishing of commitment to a group of learners and for the establishing of student work groups. These groups benefit from the synergistic learning potential of group work in general. The difficulty of achieving group

cohesion in an online setting is revealed by the finding that interaction in educational computer conferencing is sometimes represented by a series of superficially related monologues rather than the contextualized and personalized dialogues that are essential to knowledge construction (Anderson & Kanuka, 1997; Kanuka & Anderson, 1998).

Synchronous/Live Audiovisual Technology

Some access to verbal and nonverbal communication is available in an online setting through audiovisual technologies. Audiovisual technologies such as teleconferencing and webcams can be used synchronously and asynchronously. With the capacity to deliver verbal and nonverbal communication, audiovisual technology is the medium that is currently most likely to facilitate the communication of social presence and instructor immediacy to students.

Many studies have researched the use of synchronous audiovisual communications. Synchronous video conferences have many benefits and appear to be the technology that most closely captures the essence of a face-to-face environment. However, live video conferences require a high level of structure and organization and are subject to many technical problems that can cause the experience to be somewhat negative for students. There is a natural expectation of a video conference that it will replicate something of the essence of a close physical location experience. While expensive videoconferencing equipment works well, the most available inexpensive technologies involving video through the Internet are subject to speed and bandwidth restrictions and to software and hardware problems. All these issues can too frequently turn participating in a video conference into a frustrating experience. Also, the use of live video conferences removes the benefit of learner time flexibility.

Asynchronous Audiovisual Technology

The other type of audiovisual communication available to online learning environments is asynchronous video. Asynchronous video communication in the form of clips recorded by the students or by the instructor that are then sent to the other party, may provide a potential way of solving some of the instructor immediacy and social presence problems of online environments. In fact, asynchronous audio communication alone has been demonstrated to be able to convey social presence. Following their study on the use of asynchronous audio as a tool from instructors to communicate feedback to students, Ice, Curtis, Phillips and Wells (2007) stated that audio feedback was associated with feelings of increased involvement and enhanced learning community interactions. Video-clips add the visual element to the audio and thus add the possibility of communicating visual as well as verbal cues in asynchronous communications.

Self recorded video-clips that are recorded in response to received video-clips contain limited forms of verbal and nonverbal cues. These asynchronous forms of video communications, although not as rich as a live experience in totality, are not bound by the same network and software problems as live video conferences and the expectations of the experience are different. Asynchronous video communications can always be recorded again before being sent and can be replayed many times, whereas if a problem occurs in a live video conference, the time and content relating to the length of the problem are lost. The affordance of asynchronous video is an area for exploration as to how it could help to convey some level of the essence of immediacy/closeness and social presence that is critical to the motivation of some students.

The Asynchronous Video Learning Model

One design theory has been provisionally developed to use asynchronous video in an

online learning environment. The Asynchronous Video Learning Model (AVLM) was described

by Griffiths and Graham (2009). This section describes the origins, the development, and the

first proposed model state of the AVLM.

Initial Pilot. Pre-service teachers at BYU are required to take a specific class that focuses

on the integration of technology in teaching. This class, titled IPT286 for secondary pre-service

teachers and IPT287 for elementary pre-service teachers, is taught by the department of

Instructional Psychology and Technology (IP&T). A substantial challenge that has been

observed in this class is the wide variety of technical abilities that the students possess. The

range of student capability makes it challenging to know what level of technical competence the

class should be designed for and how to pace the class. In an attempt to account for the variance

in technical abilities, a flexible online version of the class was designed and piloted in the Winter

2008 semester. Elementary education pre-service teachers who were required to take the class

were given the option to choose between the traditional face-to-face class and the online section.

For the online section, students were told that they would be required to communicate with the

instructor using a webcam.

The new online section of IPT287 in Winter 2008 included an innovation that consisted

of students sending responses to assignments in the form of recorded (asynchronous) video-clips

(video-mails) and the instructor sending feedback to students in the form of video-mails. Also,

the teaching materials included pre-recorded video-clips of the instructor presenting topics. The

students and the instructor used webcams mostly on their own computers to record themselves

responding to assignments or giving feedback. The result of using webcams to record video-

mails to send to students and the instructor was that the students were able to see the instructor giving instructions, announcements, feedback, and encouragement, and the instructor was able to see each student responding to assignment questions. Both parties were able to observe the verbal and nonverbal cues that people naturally use to convey context and overall meaning in personal communication.

Initial pilot results. An analysis of the initial pilot class resulted in some interesting and sometimes unexpected findings. The data for the analysis were in the form of instructor experiences, and observations, student comments, and student scores from the student ratings system. An inductive thematic analysis and an overall narrative analysis of the initial pilot were presented in Griffiths and Graham (2009) and are summarized in this section.

Instructor–student relationships. The original purpose of using the video-mails for student assignments and for instructor feedback was to study whether a strong relationship between the instructor and students could be established with no actual physical presence. The instructor attempted to send positive messages, useful feedback, and genuine encouragement, and support to students via video-mails recorded with a webcam. Student feedback in the form of scores and comments from the BYU student ratings system in addition to instructor and peer observations suggested that the instructor was able to convey immediacy and generate a positive and motivational personal relationship with students. One student described the experience as superior to a face-to-face class and stated, "It was much more personal this way, even more so than a face-to-face class usually is." Also, in comparing the online section with the traditional face-to-face sections, students rated the class higher than all other sections of the class in every aspect of the student ratings survey. The ratings were also higher than the face-to-face version of the class that the same instructor had taught the previous semester.

Knowing each student. There were several other benefits that emerged from the use of the webcam asynchronous video technology. One of these benefits resulted from having each student introduce themselves to the instructor in a video-clip at the beginning of the class. Students were asked to describe something unique about themselves. The personal nature of this clip allowed the instructor to gain some insight into the individuality of the students and to make a personal connection. The most unexpected aspect of this interaction was that it generated far more information about students than would normally be obtained in a face-to-face classroom.

Individualized feedback. The instructor was able to respond to every student on several occasions so every student was able to see and hear personal feedback by the instructor on several occasions throughout the semester. In a traditional face-to-face classroom this would only be possible with personal interviews, and it does not seem feasible that an instructor could conduct several personal interviews with 50 students over the course of a semester.

It would seem that using video-mail gave students more personal real life feedback from an instructor than would otherwise be feasible. Initial feedback from students suggested that they felt that they received much more personal feedback than they were used to receiving. For example, one student stated, "Even though this was an online course and I did not see the instructor as much as my other professors, he provided me more help and one-on-one time than any other professor."

Richness of student responses. Another important result was the nature of student responses using the webcams. Ordinarily, students respond to most assignments in textual format giving a limited view of student knowledge. Textual responses also lack verbal and nonverbal cues that show overall tone and context. The instructor noticed that when the students recorded themselves in videos responding to assignments, they would often discuss the topic in a more

open way than if they were writing. This happened in such a way that the instructor was able to observe to a greater extent what the students actually knew and in what tone and in what context the responses were given. The videos included a richness of communication due to the verbal and non-verbal signals that are not available in text-based communication. In viewing student videos, the instructor did not have to imagine or guess what the student really meant or in what tone the response was sent. Therefore the feedback that the instructor recorded was more accurately based on the real progress and needs of the individual students.

Lessons learned. The pilot online section seemed to meet its objectives, and the students rated this section highly in comparison with the face-to-face sections of the same class. Even though the overall result of the pilot was very positive, many lessons were learned from the experience. During the semester, there had been many issues with technology that required time and effort on the part of the instructor to resolve. Some students purchased the most inexpensive webcams and had problems with them.

In the pilot class, students recorded videos using Movie Maker or the software that came with the webcam and then emailed video files to the instructor. Using this method caused several problems. For example, some students did not understand what it meant to create a video file. Students understood how to use the software and to record a video, but some of them did not understand the fact that in doing so they had created a video file somewhere on their computer. If they were able to find the file to attach to an email, the file would often be too big to send and some students did not understand what it meant to create a smaller lower quality file that would be small enough for an email attachment. In addition, sending and receiving many video-clip files meant that email boxes became full very quickly. This frequently caused problems for the instructor and some students. Posting general announcement videos and instructional videos on

the class website proved to be troublesome due to file size restrictions. In addition, some students who downloaded the files could not view them for various computer setup reasons.

The experience of the pilot online class and all the lessons learned provided a good base for the further development and innovation of the use of asynchronous video. The biggest area of research and development resulting from the lessons learned related to how webcams were used to create video-mails. It became obvious that a simple method of using a webcam to send video-mails between students and instructors was required that did not require the students to have special knowledge of the nature and location of video files. Investigation revealed several web-based video-mail solutions. Facebook, a social networking website, had incorporated video-mail into its communication system, freegabmail.com had provided a registration-free video capture website, and websites such as tokbox.com had provided an email style system for video-mails. These and other similar technologies offered free video-mail websites that allowed a user to record video without requiring any technical knowledge about the webcam. These websites also recorded video-clips to a server on the web and so students did not need to think about the location and size of video files.

Further implementations. The author of this study further developed the use of asynchronous video in an online section of the technology integration class for Fall 2008. The new use of asynchronous video included more assignments submitted by students in the form of video-mails and an innovative method for achieving collaborative student learning using video-mails. The class began by using tokbox.com as the vehicle for sending and receiving video-mails. Tokbox.com allowed a user to register and send and receive video-mails in the same way as sending and receiving emails.

While tokbox.com was used at the beginning of the semester, a new website was implemented shortly after class commenced. The new website was developed by programmers from BYU's Center for Teaching and Learning and put video-mails in a blog format rather than in the style of an email inbox. On the video blog website (CTLVideoBlog), the instructor was able to create blog pages for group work where several students had access to post and view video-clips (recorded via webcam on the site) and the instructor was able to create private blog pages that only individual students had access to. The CTLVideoBlog allowed the instructor to privately communicate via video-mail with individual students and also allowed students to collaborate by posting video-mails on group blog pages. The instructor also created a blog page that was accessed by all students for general announcements. Participants received emails to notify them when videos were posted to blogs that they had access to.

Results for further implementations. The results of this implementation were almost identical to the results from the original pilot. Student comments from the online course rating system were similarly as positive to the comments made by students about the original pilot. Most students in the class responded to a survey based on the social presence component of the Community of Inquiry Measurement Instrument as described by Griffiths and Graham (2009). The survey included nine questions designed to reveal the level of existence of the constructs of affective expression, open communication, and group cohesion according to the experiences of participants. The survey questions were based on a 5 point Likert-scale and each of the three constructs was evaluated by three questions.

The results of the measurement instrument when averaged for each construct were as follows: affective expression = 3.44, open communication = 4.42, group cohesion = 4.23. Amongst these results, the construct that stands out as being less in existence is that of affective

expression. The existence of affective expression as defined in this study is critical to the success of using asynchronous video, and therefore improvement was needed in the implementation of affective expression. These results and the experiences from the previous pilot study all led to the prototype design theory of the Asynchronous Video Learning Model that is the central theme of this study.

AVLM Design Theory

The creation of the Asynchronous Video Learning Model (AVLM) design theory is based on a combination of results from using asynchronous video in the pilot classes in addition to research found primarily in the Seven Principles of Good Practice in Undergraduate Education (Chickering and Gamson 1987). In the first pilot, video was used to build a mentoring relationship with students. Experiences of students that participated in the pilot were analyzed in an inductive fashion in Griffiths and Graham (2009). The major themes discovered in the process are shown in Table 1.

The analysis of the data from the first pilot study and the practical experience of the instructor revealed other benefits to using asynchronous video in addition to establishing the success of using asynchronous in creating close motivational relationships. The second pilot using asynchronous video at BYU incorporated a greater use of the method including student group collaboration. Results from the first pilot and experiences during the second pilot resulted in a desire to describe a model or design theory for how asynchronous video could be used in a distance learning environment. It was concluded that the need was to create an overall model for a class that was neutral of content type. The model would be used as a guide to designing the overall structure of any class that uses asynchronous video as a central communications media method.

Table 1

Thematic worksheet: Comments from Pilot, Griffiths and Graham (2009)

Theme of Statement	*Example (Negative comments in italics)*
Perception of instructor in general	The instructor was personable with the students even though this was an online section.
Perception of instructor care/concern	The instructor really showed that he cared about us students.
Perception of course in general	Overall, this class was a really good experience.
Perception of the online method	I loved doing this class online and being able to work at my own pace.
Perception of help/responsiveness of instructor	The instructor with this course was really helpful.
Perception of activities/materials	I felt like the assignments we did were directly applicable to my teaching. *Some of them took a very long time to complete.*
Perception of instructor as inspiring or motivational	The instructor encouraged us in our assignments.
Perception of learning experience	I learned a lot of valuable information in this course.
Perception of the organization of the course	Course was very well organized. *Obviously this was the first time this class has been online, so hopefully next time it will be more organized.*
Perception of communication in the course	Instructor was very good at communication between teacher and students – especially for an online class.
Perception of the use of webcam video-clips	It was much more personal this way, even more so than a face-to-face class usually is.
Perception of technical issues	*The main reason this class is hard to take online is because of the many technical difficulties I and others experienced.*
Perception of feedback/grades	*The only problem is we received feedback, not necessarily any grades.*
Perception of individual time with instructor	Even though this was an online course and I did not see the instructor as much as my other professors, he provided me more help and one-on-one time than any other professor.

To construct an overall class design model, the research based and highly cited Seven Principles of Good Practice in Undergraduate Education framework was used as a guide. Thus the original design of the AVLM blended the practical implementation of asynchronous video with the educational formula of the Seven Principles and other research. The resulting framework listed five main operational principles that are listed below and then described in more detail:

1. A mentoring and character-building relationship with high expectations.

2. Visual-oral presentations as part of a variety of assignments types.

3. Rapid, individualized, learning-centered feedback.

4. Collaborative learning with expert guidance/input.

5. Continuing communication and support for motivation to fulfill requirements.

The main operational principles, the detailed description, and the practical application described in the AVLM design theory were devised according to the practical experience of the researcher involved in the pilot studies using asynchronous video. In addition, the results from the analysis of data from the pilot studies were used to guide the creation of the model. The process of development was also supported by drawing from well established principles from other research studies.

The following tables 2–6 describe the various research studies that underline the detailed principles, the main principles that form the basis of the AVLM, and the practical application of each of the five main principles. Table 7 then shows a consolidated view of the original version of the AVLM design theory.

Table 2

Principle 1 of AVLM: Mentoring Relationships & High Expectations

Research basis for principle	Principles of AVLM	Application in AVLM
One of the Seven Principles is that Good Practice Encourages Student–Faculty Contact. Face-to-face contact between instructors and students is motivational when immediacy is conveyed. Immediacy is a term that describes the verbal and nonverbal signals transmitted between a motivating instructor and students. Rovai (2001) describes immediacy as the immediate verbal and nonverbal communication between instructor and students which promotes increased learning. Studies including Christophel (1990), Christensen & Menzel (1998), and Frymier (1993) suggest that improved instructor immediacy impacts student motivation which in turn improves student learning. Another of the Seven Principles related to instructor–student relationships is that Good Practice Communicates High Expectations. Research shows that there is a correlation between teacher expectations and student achievement. Chickering and Gamson (1987) stated simply that if you expect more, you will get it. Therefore, when teachers effectively communicate high expectations to students, students are more likely to be motivated to meet the expectations. Effective teachers not only express and clarify expectations for student achievement, but also stress student responsibility and accountability for striving to meet those expectations (Stronge, 2002, p. 37).	Students get to know instructor, their objectives, and their expectations for students. Students know that a real person exists who will act as mentor. Instructor gets to know the students as individuals. Students know that the instructor listens & recognizes them as individuals. Students see instructor as a mentor & understand that the learning experience is more than just the content.	Instructor introduces themselves to all students. Students introduce themselves to the instructor. Instructor responds to each student's introduction. Instructor presents weekly message of motivation & encouragement that is designed for character building.

Table 3

Principle 2 of AVLM: Visual-oral Presentations

Research basis for principle	Principles of AVLM	Application in AVLM
One of the Seven Principles is that Good Practice Encourages Active Learning. Chickering and Gamson (1987) stated that rather than just sitting in classes listening, memorizing, and spitting out answers, students must discuss what they are learning, write about it, relate it to past experiences, and apply it to their lives. The benefits of Active Learning include that due to participation, such learning is self reinforcing. Such reinforcement adds to the retentive qualities of what is learned. Active learning usually is enjoyable, motivational, and effective in getting life's tasks done (Petress 2008). Another one of the Seven Principles is that Good Practice Respects Diverse Talents and Ways of Learning. Chickering and Gamson (1987) stated that students need the opportunity to show their talents and learn in ways that work for them. Birembaum (1997) stated that students have different assessment styles correlated to their learning styles. A variety of activities need to be employed in student learning.	Students are more likely to critically reflect on the assignment as they are required to be actively engaged in visually and orally presenting responses. Visual-oral presentations added to written assignments and student hands on projects give a good variety to student activities.	Students respond to some assignments with video-mail presentations. Some assignments may be uniquely a video-mail presentation, other assignments may have other products and the video-mail is an explanation or analysis of the assignment.

Table 4

Principle 3 of AVLM: Rapid, Individualized, Learning Centered Feedback

Research basis for principle	Principles of AVLM	Application in AVLM
One of the Seven Principles is that Good Practice Gives Prompt Feedback. Chickering and Gamson (1987) stated that in classes, students need frequent opportunities to perform & receive suggestions for improvement. In addition to feedback, students need to able to clearly understand the meaning of the feedback if they are going to improve. In one study, Stothart (2008) stated that many students surveyed said they were confused and frustrated by *cryptic* feedback that posed questions but did not tell them where they had gone wrong in their work. According to researchers, formative feedback should be non-evaluative, supportive, timely, and specific (Shute 2008).	Instructors get a realistic view of actual level of student knowledge through video-mail than is typically achieved by reading written responses to assignments. Instructor gives rapid & relevant feedback through video-mail to increase learning & address student misconceptions or errors. Students improve & grow with rapid, relevant, clear feedback.	Instructor views each student assignment & responds individually to most assignments. Instructor responds to student assignments with a video-mail within 24 hours. Instructor gives feedback that is designed to increase learning & encourage students.

Table 5

Principle 4 of AVLM: Collaborative Learning with Expert Guidance/Input

Research basis for principle	Principles of AVLM	Application in AVLM
One of the Seven Principles is that Good Practice Encourages Cooperation among Students. Chickering and Gamson (1987) stated that sharing one's own ideas and responding to others' reactions improves thinking and deepens understanding. Collaborative learning holds enormous promise for improving student learning and revitalizing college teaching (Goodsell & Maher & Tinto 1992, p10). In collaborative learning, there is the intellectual synergy of many minds coming to bear on a problem.. this mutual exploration, meaning making, and feedback often leads to better understanding on the part if the students, and to the creation of new understandings as well... listening to and acknowledging diverse perspectives, working in a cooperative spirit, becoming a peer teacher or a peer learner - all these activities are socially involving ... such intense social interaction stimulates learners and learning (Goodsell & Maher & Tinto 1992, p10).	Students feel that they are part of a learning community and that their involvement in the discussion is valued. Instructor guides the learning experience and injects instruction where appropriate.	Students introduce themselves to other students in video-mails. Students respond to group discussion assignments with video-mail presentations. Students respond to other student presentations with video-mail presentations. Instructor guides the learning experience and injects instruction where needed via video-mail.

Table 6

Principle 5 of AVLM: Communication & Motivation to Fulfill Requirements

Research basis for principle	Principles of AVLM	Application in AVLM
One of the Seven Principles stated that Good Practice Emphasizes Time on Task. Chickering and Gamson (1987) stated that allocating realistic amounts of time means effective learning for students and effective teaching for faculty.	Students are reminded & motivated to fulfill assignments & to stay on track. Students understand time allocation requirements for assignments. Students see the instructor regularly and especially when struggling, strengthening the instructor–student relationship.	Instructor presents weekly general announcements & current issues via video-mail. Instructor explains assignment requirements, constraints, and time requirements. Instructor sends personal video-mails of encourage and support to students who are struggling.

Table 7

Summary of the Asynchronous Video Learning Model

Principle	Rationale	Application
Establish a mentoring & character building relationship & high expectations	Students get to know instructor, their objectives, and their expectations for students. Students know that a real person exists who will act as mentor & understand that the learning experience is more than just the content. Instructor gets to know the students as individuals. Students know that the instructor listens & recognizes them as individuals.	Instructor introduces themselves to all students. Students introduce themselves to the instructor. Instructor responds to each student's introduction. Instructor presents weekly message of motivation & encouragement.
Visual-oral presentations as part of a variety of assignment types	Students are more likely to critically reflect on the assignment by doing oral presentations. Visual-oral presentations added to written assignments and student hands on projects give a good variety to student activities.	Students respond to some assignments with video-mail presentations. Some assignments may be uniquely a video-mail presentation, other assignments may have other products and the video-mail is an explanation or analysis of the assignment.
Rapid, individualized learning centered feedback	Instructors get a more realistic view of the actual level of student knowledge through video-mail assignments by reading written responses. Instructor gives rapid feedback through video-mail to increase student learning & address any student misconceptions or errors. Students improve with rapid and relevant feedback.	Instructor views each student assignment & responds individually to most student assignments. Instructor responds to student assignments with a video-mail within 24 hours. Instructor gives feedback that is designed to increase learning & encourage students.
Motivation to fulfill requirements	Students see the instructor regularly, strengthening the instructor–student relationship. Students are reminded & motivated to fulfill assignments & to stay on track.	Instructor presents weekly issues and announcements and explains requirements/constraints via video-mail. Instructor sends personal video-mails to encourage & support struggling students.
Collaborative learning with expert guidance	Students feel that they are part of a learning community & that their involvement in the discussion is valued. Instructor guides the learning experience & injects instruction where appropriate.	Students introduce themselves to each other in video-mails. Students respond to group discussion assignments (including peer responses) with video-mail presentations. Instructor guides the learning experience, adds instruction where needed via video-mail.

Chapter 3: Methodology

This research is concerned with the improvement of a practically applicable design for the use of the Asynchronous Video Learning Model (AVLM) in the realm of online education. With the central topic of the research being an educational design model, formative research has been selected as the most appropriate model of research that is able to support the aims of the study. Formative research, as described by Reigeluth and Frick (1999), is a model that is designed to study the practical application of an educational design model or theory in a real life instance or series of instances wherein the model or theory is implemented. There are several types of formative research, and in the case of this study, the designed case type of formative research was implemented. A designed case consists of selecting a theory or model of design and then creating or devising a situation where the theory or model is used. A designed case in formative research is a qualitative case study mainly in the form of an analysis of the experiences of participants in a case where the educational model or theory is implemented.

The objective of formative research is to improve or develop a design theory or model. Therefore, in simple terms, this study aimed to determine methods that worked well, methods that did not work well, and improvements that could be made to the theory. To answer these questions, participant experiences recorded in the form of class documents, participant interviews, and participant surveys, were used to conduct a qualitative analysis that was focused on the themes of positive and negative experiences in relationship to the constructs of social presence and immediacy/closeness as defined in this study.

Formative Research: Designed Case Approach

Reigeluth and Frick (1999) described the formative research methodology as a kind of developmental research that is intended to improve design theory for designing instructional practices or processes. Formative research is not designed to produce descriptive knowledge of *what is* but rather to produce knowledge of *how to* that can be useful in the practical application of design theory. According to Reigeluth and Frick (1999), there are three main variations of formative research that can be employed to answer how-to questions. These are termed as designed cases, in vivo naturalistic cases, and post facto naturalistic cases. Designed cases describe cases where the theory is intentionally instantiated. In vivo naturalistic cases describe cases where the formative evaluation of the instantiation is done during its application. Post facto naturalistic cases describe cases where the formative evaluation of the instantiation is done after its application. Formative research is also distinguished between whether the purpose of the study is to develop a new theory or to improve an existing theory.

The approach of this study was to gather data from one designed case of an online class section of IPT286 at BYU with the objective of improving the Asynchronous Video Learning Model. The IPT286 class is taught to secondary pre-service teachers. For Winter 2009, one online section of this class was taught using the AVLM. The instructor of this class was trained in the AVLM and was required to follow its structure while allowing for some flexibility and variation. Class artifacts and the experiences of students and the instructor provided the data for a qualitative analysis that responded to the formative research questions for this study.

For a designed case to improve an existing theory, the methodological concerns center within a given process:

1. Select a design theory.

2. Design an instance of the theory.

3. Collect and analyze formative data on the instance.

4. Offer tentative revisions for the theory.

The first step in the process is described in more detail following the list and the three remaining steps are described in the data collection and data analysis sections.

Design Theory: Asynchronous Video Learning Model

The Asynchronous Video Learning Model (AVLM) was first developed for teaching a pilot online section of IPT287 for pre-service elementary education teachers at BYU. With experience and results from four pilot classes in total that have used asynchronous video to varying degrees, AVLM was developed to a proto-theory level. The operational principles and practical application involved in AVLM are explained in detail in the literature review section of this study.

Data Collection

The data collection in this study was designed to respond to the requirements of the formative research method. Formative research using a designed case instance is centrally concerned with the experiences of participants and the data collection consists of participant interviews, participant journals, participant documents, and other artifacts. This section describes the designed case and the data collection process in more detail.

Unit of Analysis: Designed Case Instance

One online section of IPT286 was taught in the Winter 2009 semester by an instructor who had not previously employed the AVLM design theory. The instructor was selected for two main reasons. First, she was experienced with the class content because she had previously taught sections of IPT286. Second, it was believed that she had a level of presence as a teacher in

a face-to-face classroom that would be potentially observable in the study setting where video communication replaces face-to-face interactions. The instructor agreed to use AVLM for the class. This class was the designed case instance for this formative research study. Students in the class selected the online option and the class was completely online. There were 14 students in the class. The students in the class involved in the study were all full-time secondary education students in the School of Education at BYU. All students who chose the online learning option were required to have access to a computer and a webcam. The demographic of students in the education program is predominately female and students in the class were mostly in the 18–30 age range.

Description of Methods

Data collection in this case study consisted of interviews, surveys, and document analysis. The context of this case study was one online class designed to teach secondary education student teachers the effective use of technology in the classroom. The nature of the student participation in the class followed a normal pattern of online education inasmuch that students performed tasks where they chose at the time that they chose.

Observation of participants is difficult in an online learning environment and any observation that could be attempted would most likely impact the behavior of the students to an extent that would diminish the value of the observation. Therefore no formal observations were conducted and the study relies on the data from interviews, surveys, and document analysis.

Student interviews. Students declared willingness to participate in interviews at the beginning of the semester in an online survey. Six students from the class were selected based on a Maximum Variation criterion as defined by Patton (1990). In this study, Maximum Variation is defined as including the highest and the lowest achieving students. Achievement in the class was

defined by the final grade of the student. Three high performing and three low performing students were selected from the willing participants. Six interviews were performed and the author determined that the six interviews provided sufficient evidence to suggest that further interviews were not required. The decision that no more interviews were needed was made based on the rationale that student interviews consistently resulted in the same patterns of responses.

The purpose of the interviews was to discover student perspectives on instructor immediacy, instructor–student relationships, student motivation, perspectives on social presence, perspectives on the use of asynchronous video, and attitudes towards the class and the instructor. The selected students were asked the questions in Appendix A in a semi-structured interview that lasted approximately 30–45 minutes, with the order being determined during the interview depending on the flow of the conversation. Interviews were recorded in video format.

The author of the study was the interviewer. To mitigate unwillingness to share negative information, it was clearly explained that the object of the study was the methods that are used in the class to mediate the instructor–student relationship (video-clips) and that it was desirable for them to take a critical stand to help to identify weaknesses of the methods. The interview questions shown in Appendix A are designed to ascertain information relating to general likes and dislikes about the experience, and also information relating to the constructs of affective expression, open communication, group cohesion, and immediacy/closeness.

Instructor journal. The instructor kept a reflections journal in the form of a blog that was updated at least weekly during the semester. The instructor reflected on experiences as the instructor in the class in general and in relationship to the use of video-mail in particular.

Instructor interviews. The researcher informally interviewed the instructor weekly during the Winter 2009 semester. The researcher also conducted a final one-hour interview with

the class instructor at the end of the semester. The interview followed a semi-structured pattern according to the questions in Appendix B. The questions were designed to ascertain information relating to general opinions and information relating to the constructs of affective expression, open communication, group cohesion, and immediacy/closeness as defined in this study.

Surveys. Students were invited to submit anonymous comments about the class and instructor. These comments were submitted as part of the normal BYU online student ratings.

Document analysis. As there were no formal observations, there was a heavy focus on document analysis to provide triangulation. Due to the nature of the class, many artifacts were available for analysis from different forms of electronic communications. Some of the artifacts were used to provide background and contextual information, and the data that were relevant to the analysis process were extracted from the artifacts is in the form of identifiable comments or statements. The available documents included in the analysis were as follows:

1. Class documents, including the syllabus, class introductions, grading policies, general instructions, specific assignment instructions, and instructional materials (video-clips, tutorials).
2. Emails/other electronic communications from the instructor to all students.
3. Emails/other electronic communications from the instructor to individual students.
4. Emails/other electronic communications from the students to the instructor.
5. Video-mails sent by the instructor to all students.
6. Video-mails sent by the instructor to individual students.
7. Video-mails sent by the students to the instructor.
8. Video-mails sent by students to other students.

Table 8 shows how the data from interviews, surveys, and document analysis directly

relate to the stated research questions for this study.

Table 8

Data Gathering

Research Question	Data
In context of how participants experience the AVLM design theory in terms of affective expression, open communication, group cohesion, and immediacy/closeness: What do participants view as positive about those experiences?	Interview questions (Affective expression 6–7, Open communication 8–9, Group cohesion 10–13, Immediacy/closeness 14–17, General Questions 1,3) Open-ended comments from the Student Ratings system Class communications and assignments Instructor journal
What do participants view as negative about those experiences?	Interview questions (Affective expression 6 –7, Open communication 8–9, Group cohesion 10–13, Immediacy/closeness 14–17, General Questions 2–4) Open-ended comments from the Student Ratings system Class communications and assignments Instructor journal
What implications are there for the AVLM design theory through analysis of these experiences?	Interview questions (Affective expression 1–2, Open communication 1–2, Group cohesion 1–3, Immediacy/closeness 4–5, Negative experiences 6) Open-ended comments from the Student Ratings system Class communications and assignments Instructor journal Final interview with instructor

Chapter 4: Data Analysis

Data analysis in this study was qualitative in nature according to the previously described principles of formative research. The study was specifically based on the designed case instance of formative research. This section describes the principles and processes of analysis involved in this study. This section also defines and describes the research constructs and instruments used to analyze the data.

Background of the Investigator

As in any qualitative research study, the researcher or investigator is the primary instrument for gathering and analyzing data. Merriam (1998) stated that "Human instruments are as fallible as any other research instrument" (p. 20). It is therefore essential to discuss the background, experience, and biases of the researcher that may affect the interpretation of data in the study. In addition to being a doctoral student in the department of Instructional Psychology and Technology at BYU, at the date of publication of the study, the author was Director of BYU Hawaii Online. The author had a large stake in the outcome of the study because he was the person who pioneered the original idea to use asynchronous video communications as a central communications method in online and blended classes. The author had expressed a belief in the intrinsic value of the human relationship dimension of an educational experience. It was believed that something important can be added to an educational experience when a student has a positive mentoring relationship with a caring instructor and also when a student has a positive collaborative relationship with other students. It was also believed that acquiring content knowledge and developing skills were not the only valuable elements of education. The author believed that an educational experience that allowed for content knowledge and skill development without allowing for a positive mentoring and collaborative experience was

missing something exceptionally important to the overall development of students as human beings.

Research Constructs

The constructs that were used in this study to analyze the effectiveness of the AVLM design theory included elements of social presence from the Communities of Inquiry Framework and defined descriptions of immediacy/closeness as previously discussed in detail in the literature review section of this study. The three elements of social presence are the constructs of affective expression, open communication, and group cohesion.

Affective expression. Affective expression is defined as the expression and reception of emotions that are associated with or usually expressed and understood in settings of close physical proximity. Specific examples of affective expression are humor and self-disclosure. Self-disclosure is described as a sharing of feelings, attitudes, experiences, and interests.

Open communication. The definition of open communication is reciprocal and respectful exchanges, or a mutual awareness and recognition of each other's contributions. Recognition is defined as the process of communication in support or acknowledgement of individual contributions. Specific examples would include explicitly expressing appreciation and agreement as well as complimenting and encouraging others.

Group cohesion. Group cohesion is collaborative communication that builds participation and empathy between participants. Group members utilize unique knowledge and skills of individual members, synthesize diverse viewpoints, and create an integrative understanding of the situation at hand.

Immediacy/closeness. Immediacy/closeness is defined as communication behaviors, some visual and others vocal, that enhance closeness to and nonverbal interaction with one

another. Immediacy/closeness engenders close relationships that positively impact student motivation. When high levels of immediacy/closeness are present, students know their instructor, feel that they are known, receive personal and meaningful feedback, have a sense of well being, and seek support.

Analysis Process

There are three major sections of analysis in this study: a detailed narrative description of the case, an inductive domain analysis, and a deductive domain analysis. These sections are described in more detail below.

Narrative case description. A rich narrative description of the case was created from an analysis of case artifacts, including instructor notes, instructor interviews, and class documents, including a syllabus and assignment documents. The narrative description was based on the concept of a narrative explanation being derived from the whole experience as described by Connelly & Clandinin (1990), who suggested that experiences of participants and researchers cannot be extracted from their place in the overall case experience and context. According to Connelly & Clandinin (1986), the purpose of a narrative description of stories and experiences is to include the everyday and sometimes mundane experiences of participants and reflection thereon. A narrative description is a temporal process reflecting the biographical experiences of participants.

This model of narrative description emphasizes a collaborative role between researcher and participants, both having a representative voice. Connelly & Clandinin (1990) stated that the participants' stories are first heard before that of the researcher, and all of the stories are first situated in a time, place, and proper context. Accordingly, this section first describes the nature of the class: its timing, content, structure, and objectives; the instructor; the students; the

constraints; and any additional information needed to paint a detailed picture of the overall case being studied. Second, experiences of participants are presented with the students' experiences and stories followed by the experiences and stories of the instructor. Lastly, the experiences and stories of the researcher are presented.

Inductive domain analysis. Patton (1990) stated that inductive analysis occurs when the patterns, themes, and categories of analysis "emerge out of the data rather than being imposed on them prior to data collection and analysis" (p. 390). In particular, the investigator looked for themes that did not naturally fit into the main focus of this study. In addition, the investigator looked for themes relating to comments that were obviously negative.

Comments from interviews, student ratings, and journals were separated into distinct statements at the thematic unit level. Budd, Thorp, & Donohew (1967) defined the thematic unit as a single thought or idea that conveys a single item of information. In other terms, distinct statements are portions of comments from the various sources that include a self-contained statement relating to a single identifiable item of information. A simplified domain analysis process (Spradley 1979) as described below was used to analyze the distinct statements.

All the distinct statements from all of the interviews, student ratings, and journals, were put into one long list. Each distinct statement in the list was studied and a theme was created to hold it or the distinct statement was assigned to one of the previously created themes. The statements were assigned to a theme according to the inclusion principle of Domain Analysis defined by Spradley (1979) as x being a type of y where x is a distinct statement and y is a coded theme. As each statement was assigned to a theme, the themes were scrutinized and sometimes changed if better names for them were discovered. The process was continued until every distinct statement in the list was assigned to a theme. The coded list was then analyzed again to

see if all distinct statements were assigned to the best fitting theme and some statements were re-coded. The resulting coded list was peer reviewed and the reviewer suggested changes to the themes. Changes were made over several iterations of peer review. Eventually the list of themes that had been created was organized into cover terms, domains, and sub-domains.

Deductive domain analysis. Deductive analysis is different from inductive in that the data are identified as belonging to predefined themes or categories. Distinct statements as described above were analyzed and sorted into groups that had a semantic relationship to the cover terms of affective expression, open communication, group cohesion, immediacy/closeness, and other. These groupings were recorded on a worksheet in spreadsheet format. Statements within the cover term groupings were further designated as being positive or negative.

Presentation of Data

This model of narrative description requires that both researcher and participants have a representative voice. According to Connelly & Clandinin (1990), the participants' stories are first heard before that of the researcher, and all of the stories are first situated in a time, place, and proper context. Accordingly, the study first describes the class and its nature, timing, content, structure, objectives, instructor, students, constraints, and any additional information needed to paint a detailed picture of the overall case being studied. Second, experiences of participants are presented with the instructor's experiences and stories followed by the experiences and stories of the students. Next, experiences of the researcher are presented. Following the narrative sections, the qualitative analysis results sections are presented. Lastly, the results are summarized and the study is concluded in the discussion section. The results of data analysis are described in eight sections:

1. Description of IPT286 Online Section.

2. Student perspectives.

3. Instructor perspectives.

4. Researcher perspectives.

5. Inductive analysis results. Presentation of the themes and semantic relationships discovered in the inductive domain analysis.

6. Deductive analysis results. Presentation of the positive, negative, and otherwise distinct statements in the four cover term groupings of affective expression, open communication, group cohesion, and immediacy/closeness.

7. Discussion of the impact of all the analysis results on the research questions of what worked well and what did not work well in the AVLM design theory according to the stated research questions.

8. Discussion of the impact of the research findings on the AVLM design theory and conclusion of how AVLM should be changed and improved.

Qualitative Research Standards

The development of standards for qualitative research studies has helped to ensure that there are common elements that identify a certain level of trustworthiness in all the different styles of qualitative studies, as "the more the inquirer can do to make the inquiry trustworthy, the more likely it is that readers will be persuaded to read on" (Williams 1999, p. 1). The following section describes in detail the steps that have been taken as part of this study to ensure that this qualitative research adheres to well established standards of quality.

Credibility. Williams (1999) described a credible study as believable to critical readers and approved by the persons who provided the information gathered during the study. This

study relied on eight of the methods mentioned in Williams (1999) as described below to ensure the credibility of the study.

  Prolonged engagement. The researcher has been involved in the continuing design of AVLM and was an advisor to the instructor and observed the class being studied from the beginning to the end, and as such had a deep understanding of the context and workings of the class setting.

  Persistent observation. The investigator studied all details of the class and ensured that details that were not directly related to the study questions were explored by conducting an inductive analysis and also by analyzing any comments from the deductive analysis process that did not fit into the research constructs.

  Triangulation. Several different sources of data were analyzed in this study. Many video-clips sent from students to the instructor were analyzed, as were video-clips from the instructor to the students. Emails sent from students to the instructor and vice versa were analyzed. Six students were interviewed by the researcher.

  Peer debriefing. One BYU professor from the department of Instructional Psychology and Technology, Dr. Charles Graham, scrutinized and reviewed the data analysis and findings of this study. In addition, a peer reviewer scrutinized the inductive analysis process and results over several iterations.

  Negative case analysis. The investigator deliberately sought for examples of experiences and themes that were contrary to or different from the main themes that emerged in the analysis process. Examples of negative cases and their implications to the AVLM model were reported.

Progressive subjectivity checks. The researcher continually checked previously written notes and remarks and documented the changing nature of research constructs in the field notes. Field notes included recordings of the biases and preferences of the investigator.

Emic perspectives. As far as possible in the context of this study, in which the investigator was also a central participator, other emic perspectives from students and the instructor were reported.

Member checks. The findings of this study and the interpretations of the author were presented to all of the participants in the study. Some participants requested minor changes to the reporting of the data in the study. All participant requests for changes were honored.

Transferability. Williams (1999) described transferability as the applicability of the findings of the study in other contexts or settings. In the context of this study, the main purpose was to propose a robust design theory for practical use in online and blended learning. The model was not designed to be completely proscriptive or set in stone and can therefore be taken and modified for actual use by other researchers, designers, and practitioners. The narrative description in this study may also be useful for understanding the principles behind the AVLM design theory and it may help to facilitate potential transfer by a reader. The results of this study were written to include as much of the authentic rich descriptions discovered in the study as possible.

Dependability. Dependability was described by Williams (1999) as the stability or consistency of the inquiry process used over time. This can be verified by a dependability audit performed by an independent auditor. This can also be determined by the quality and robustness of the data collection and data analysis methods. This study was audited by one professor in the department of IP&T at BYU. Also, the data collection and data analysis methods sections of this

study were well defined according to well known research based methods, and can be verified and scrutinized by the reader of the study. To facilitate an audit, the investigator kept a detailed audit record of occurrences and processes related to the study.

Confirmability. Williams (1999) described confirmability as the quality of the results produced by an inquiry in terms of how well they are supported by informants (members) who are involved in the study and by events that are independent of the inquirer. As defined in the credibility section, study findings and interpretations by the researcher were presented to the research participants. The author also referred to well known peer-reviewed literature to back up findings and interpretations of the author. The author kept a regular audit trail that is referred to in the report.

Limitations of the Study

This study had several limitations. The main limitations were in the areas of the biases of the researcher and in the lack of direct observation in the study. These limitations are described in more detail below.

Researcher bias. This study had some clear limitations that were caused by the status of the researcher as the inventor of the design theory that was studied. This was somewhat mitigated by two factors. First, the students had opportunities for anonymous feedback through the BYU student rating system. Second, one of the objectives of the peer review was to look at the raw data and assure that all recorded viewpoints were included in the study data presentation and discussion.

Lack of observation. Another limitation was the lack of real-time observation in the study. This was due to the dispersed nature of an online class environment in which students did assignments when and where they chose. The impact of the lack of observation was reduced by

the range of other artifacts that were available for analysis and in particular video-clips recorded by students and by instructors in which the participants were visually observed communicating and responding to assignments.

Ethical considerations. The use of asynchronous video-clips for communications and assignments was experimental in the context of the IPT286/287 courses for student teachers at BYU. Therefore, positive and negative effects are undocumented at this time. It is therefore possible that the methods being studied could be less effective than usual methods used to teach this course. These considerations were addressed by the fact that the students were able to choose between the online section and the normal face-to-face class, and they were instructed in advance that they would be using webcams as part of the class. Other considerations included the use of personal communications, the impact of interviews, and the use of interview data in the study. An IRB was submitted to BYU and was approved. The IRB process and the use of informed consent for all data minimized the risks to participants in this study.

Limitations of study methods. One limitation in the way the study was designed was that there were few opportunities for anonymous feedback. Participants had opportunities to share experiences through interviews and journals, but the students only gave anonymous feedback in the student ratings system and the instructor gave no anonymous feedback. More experiences could have been shared with more opportunities for anonymous feedback. Another weakness in the study methods was the irregularity of researcher notes. The researcher kept a journal, but there could have been more frequent entries that would have allowed for more observation of the developments throughout the time of the study. Major changes and developments were recorded, but there would have been useful information in a more frequent and more detailed record.

Chapter 5: Description of IPT286 Online Section

Prior to the Winter 2009 semester, asynchronous video had been used by the researcher in two separate pilot sections of IPT286/287. Experiences from these pilots led to the design of the AVLM. The model was implemented in IPT286 Section 12 in Winter 2009. Section 12 of IPT286 was taught in the Winter 2009 semester by an instructor who had two years of experience teaching the face-to-face version of IPT286 and who was willing to implement AVLM in the new online section. The IPT286 class was the designed case instance for this formative research study. Section 12 was designated as the online section of IPT286 for students whose teaching major was Language Arts, Social Studies, History, or Dance. There was a different online section for other majors.

Students were first made aware of the online class when an email was sent to students in the teaching program explaining that there was an online section of IPT286 that was available for the Winter 2009 semester. The email explained the requirement to have access to a computer, a webcam, and the Internet and that many assignments would be completed using the webcams. There were 15 students who initially opted to join the online section 12, and one dropped the class after the first week, leaving 14 students for the remainder of the semester. The demographic of students in the education program is predominately female and students in the class are typically in the 18–30 age range. The class consisted of two males and 12 females, which was consistent with the overall demographics of students in the teaching programs at BYU.

Communications and Class Technology

Before the semester began, and on the first day of the Winter 2009 semester, emails were sent to the students who had signed up for section 12 explaining that they should log into the BYU Blackboard CMS system to find instructions. In addition to Blackboard, students were also

required to use an online program called CTLVideoBlog. Blackboard was used for announcements, assignment instructions, quizzes, and grades. Almost all communications in the class were in the form of videos posted on the CTLVideoBlog class pages and emails. One assignment used the Blackboard Discussion Board function for communications.

As a result of early pilots using asynchronous video, the researcher made a request to the BYU Center for Teaching and Learning to build a website where students and instructors could record, post, and review video-clips. The CTLVideoBlog was designed and implemented during the Fall 2008 semester, and was available for the Winter 2009 Section. Students and instructors logged into this website with their normal BYU ID and password that gave them access to classes they were involved in. The site organized discussions as blog pages that were accessible by groups as defined by the instructor and personal pages that only the student and instructor had access to. Figure 3 shows an example of a group blog page in CTLVideoBlog. Thumbnails of video-essays are shown with the most recent at the top of the page.

Figure 3. Example of a group blog page on CTLVideoBlog.

Introductions Assignment

The first day of class was on the fifth of January 2009. Students were introduced to the instructor by watching a video that she had posted on Google Videos. Students next completed an online survey, and then created an introductory video-mail through a webcam on the class website. In their introductory video-mails, students were required to introduce themselves, to describe where they were from, to discuss their hobbies and interests, to reveal something unique about themselves, and to explain why they chose their teaching major. The instructor responded to each student video-mail introduction with an individualized video-mail. In the video-mail the instructor acknowledged and discussed the details that the students had shared.

Class Assignments Schedule

Following the first week of introductions, students were required to follow the instructions in Blackboard to complete assignments each week. In Blackboard, all the instructions for every assignment were on one page so that students could follow the class simply by starting at the top and following the instructions for every assignment until they reached the bottom of the page. The deadline for all assignments in every week of the semester was Wednesday at midnight.

The assignments are summarized in Table 9. Some of these assignments required students to review materials and present their reflections, and others required students to create various web-based products. Two assignments required students to create and discuss ideas with other students. Following the table, three assignments are described in more detail.

Table 9

Summary of Student Assignments

Name	*Short Summary*
Introduction	Watch the instructor video introduction. Post a video-clip introducing yourself to the instructor and to other students. Complete an online survey.
NETS-T Reflections	Study the NETS-T standards for technology in education. Post a video-clip discussing NETS-T and how they were implemented in your K–12 experience.
Google Tools	Experience Google tools and then submit two ideas on how these tools might be useful in K–12 education.
Internet Safety	Read two talks by Elder Ballard and watch video-clips on the Netsmartz.org website. Post a video-clip discussing how you can protect your own family, and what you can do as a teacher to help students be safe on the Internet.
Copyright and Fair Use	Read the copyright and fair use guidelines document and take the copyright and fair use quiz.
Google Earth Group Discussion	In your small group, post a video-clip discussing how students might use Google Earth in your discipline. Then watch a clip posted by another student in your group. Post a clip discussing this student's ideas and how these ideas might be developed or expanded.
Google Earth Virtual Tour	Create a virtual tour related to your discipline based on a selected state standard and objective.
Movie Project Plan Video Post	Plan how you will be creating your movie. Post a video-clip describing the state standard/objective and technology you have chosen, and your idea for the movie that students would create to help them achieve that objective.
Movie Creation	Using iMovie or Movie Maker, create a 2–4 minute movie as if you were a student following the idea previously discussed and agreed with the instructor. Post the movie to YouTube.
RSS & Staying Up-to-date	Create an RSS feed and subscribe to five educational technology feeds. Find five blog sites. Post a screen shot of the RSS and post the URLs for the blogs.
Class Discussion about Blogs	Watch two videos posted by other students. Post a video-clip discussing the two other students' ideas and then discuss your own original idea about how blogs could be used to enhance an educational experience.
Blog Creation	Create a blog using one of the suggested websites according to the detailed rubric.
Wiki Creation	Create a Wiki based on a selected state standard and objective and according to the detailed rubric.
Final Post and Surveys	Complete the final surveys. Watch the TPCK instruction clip. Post a final video-clip describing your understanding of TPCK and its relevance.

NETS-T Reflections Assignment

After the initial introductions, the next assignment was based on the National Educational Technology Standards for Teachers (NETS-T). The NETS-T standards have been developed by the International Society for Technology in Education (www.iste.org). The standards serve as a benchmark and guidelines for the effective integration of technology in education. In this assignment students were required to study documents that described the standards in detail. Students were then required to post a video-essay to CTLVideoBlog in which they answered two questions:

1. In your school experience, do you think teachers met the standards? If so which ones did they meet, or which ones were lacking?

2. What do you think of the standards? Would student learning be better if teachers were able to reach these standards?

For this assignment, there were no right or wrong answers, but rather this assignment was an opportunity for students to reflect on their own experiences and also on the relevance of technology integration in their future careers as teachers. The instructor then responded to each student's video-essay with an individualized video-response.

Movie Creation Assignment

Roughly halfway through the semester, students were required to create an educational movie based on a selected Utah state standard and objective. Students were required to use Windows Movie Maker on a PC or iMovie on a Mac. This assignment was completed in two stages. The first week, students were required to plan their projects and to describe what they were going to do in a video-essay. In this video-essay students were required to include multiple statements and explanations:

1. State the technology you picked and why. (Movie Maker or iMovie are the two options).

2. State the objective you picked as it appears on the UEN website. Please make sure to mention the specific grade level, standard number, and objective number of your choice and then read the actual objective as it appears on the site.

3. Explain what type of movie you want to create to help your students learn this objective. The movie you describe will be an example of what your students would be expected to create in your class as an assignment.

On receipt of each student video-essay, the instructor recorded a video-response to discuss the choices of the student and in certain cases to suggest other options. The student video-essays and the instructor responses were in the first week of the assignment. In the second week, students produced the movie that they had previously described to the instructor. From Blackboard, students had links to various video tutorials on creating movies and on downloading clips from some of the video hosting sites on the Internet. Students were required include specific elements in their movies:

1. Some kind of intro at the beginning showing what the class is.

2. Still images of some kind (as many as you want).

3. At some point your voice must be on the movie (it can be short).

4. Transitions between images and/or video-clips.

5. Titles (as many as you want).

6. Credits at the end.

7. Music (Use freeplaymusic.com or stick to the 30 second rule for anything else).

Then, after the movie was created, students were required to upload the movie file to Google Videos. Once uploaded and live, students were required to post the URL of their movie to a Discussion Board thread in Blackboard.

Class Discussion about Blogs

In the second to last class assignment, students were required to create an educational blog using one of the free blog creation websites that were available. In the week previous to the actual blog creation project, students participated in a class discussion about the use of blogs in education. The assignment was designed to allow students to express their own ideas about how blogs could be used, and to listen and reflect on ideas generated by other students. Every student was required to post one video-essay to a group blog page on the CTLVideoBlog class website. Before posting a video to the class discussion, the students were given some instructions:

1. Watch the two most recent posts by other students and listen to their ideas.

2. Post a video and discuss the two previous ideas, and then add your own unique idea about how a blog could be used to enhance education in your future class.

To keep the assignment equal for all students, the instructor and the researcher both posted ideas on how blogs could be used. With these video-posts, the first student to complete the assignment had two ideas to watch and discuss. All students in the class signed on to post their videos at some point in the week. Every student was able to listen to at least two ideas from other students on how blogs could be used, and every student was able to add his or her own original idea. The following week, students were able to use the ideas they had generated to create an educational blog.

Final Assignments

The final assignments, as well as any outstanding assignments and bonus assignments, were due at midnight on the seventeenth of April 2009. As part of the final assignments, students were first required to watch a flash animation that showed the relationship between pedagogy, content, and technology. The animation also covered what it means to have the knowledge of the interaction between all three domains. Next, students were required to complete their online student ratings for the class and to complete an online survey about their experiences in the class. The survey was based on the Community of Inquiry Framework Measurement Instrument as shown in Appendix B. Students were finally required to post a final video-essay according to given requirements:

1. State that you have done the final survey, your student ratings, and then explain what you understand about the interaction between pedagogy, content, and technology (based on the flash animation).

2. Give your personal opinion on the effective integration of technology in teaching and how your perspectives have changed or not through your learning experience this semester.

Some of the students finished the class early, but the majority posted their final video-essay in the week of the final deadline. The instructor sent a final individualized video-response to every student. The instructor then posted all student grades to the BYU grading system. Six students in the class were then interviewed as part of this study. Their perspectives on the class and use of asynchronous video are reported in the next section.

Chapter 6: Student Perspectives

This section relates experiences and stories related to the IPT286 online section from the perspective of the students in the class. Student perspectives are in the form of comments made by students in video-mails related to individual assignments, video-mails in class discussions, student interview transcriptions, and emails sent from the students to the instructor. For reporting in this study, the students who were interviewed have been named April, Camille, Corinne, Emily, Mindy, and Rachel.

Background

Students were first made aware of the online class when an email was sent to students in the teaching program explaining that there was an online section of IPT286 available for the Winter 2009 semester. The email explained that the students would be required to have a webcam and access to the Internet. It was explained that the students would be using their webcams to complete assignments and to communicate with the instructor, and it was explained that the webcams would only be used asynchronously and not for live discussions. Students who accepted these conditions signed up for the online section. Students reported fairly similar reasons for choosing the online section. One student, Corinne, reported, "The reason I took the class online was because I was taking quite a few units this semester, I was taking 17 units and so I thought it would fit into my schedule better." Another student, Mindy, said:

> One of the main reasons I signed up for this class was the flexibility, the convenience of doing it on my own time. When I am in the classroom and we are given group work we have to coordinate schedules and coordinate when we can meet and I think because I didn't need to worry about doing that.

As described by the students, flexibility was the main reason for taking the online course. In the class, students posted a total of 133 videos. Of these videos, 51 were posted between 8:00 a.m. and 5:00 p.m., and 82 were posted after 5:00 p.m.. With 82 (62%) videos posted after 5:00 p.m., and with 34 (26%) videos posted after 10:00 p.m., flexibility was certainly a key component of the student experience.

Webcam Use

The requirement for using webcams was clearly explained in the email that was sent to prospective students and students willingly chose to participate. However, many of the students had never used a webcam and expressed some initial apprehension at using one for communication and assignments. In the interviews students expressed their apprehension. April explained, "I was scared. I didn't want to do videos of myself, I was like why would I need a webcam?" Emily stated, "I was nervous I wouldn't know what to do with it or how to use it or I would get the wrong webcam." In practice, some students did experience some problems at least at the beginning of the class. Emily shared her experience:

> And so I tried to video tape it, and so I like recorded it and I would go to press submit and it wouldn't let me save it, and so for the first 2 weeks I couldn't figure it out, and so I had to use my roommate's computer and then it worked.

A few students had used webcams previously. For example, Corinne, a non-traditional student, related, "Well I have some experience with webcams, over Christmas we used it to look at the grandchildren." Camille described a mix of apprehension and excitement with the idea of using a webcam in the class:

I was kind of excited about it just because I'd never used a webcam before so I was a little excited to learn about it. I was a little bit nervous that I wouldn't be able to figure it out, that I wouldn't really know what to do with it, but I was excited to learn about it.

In addition to some apprehension in using a webcam, there were also some preconceived ideas about the cost of webcams. The webcam that was recommended to students cost $30, but before knowing this, some students were thinking that purchasing a webcam was going to be a greater expense. April said, "I also thought it would cost a lot more than it did, I thought it was going to cost a lot of money. I thought it was going to be a $90 thing at least."

Over the semester, students who made comments on the topic expressed that they had grown more comfortable with being recorded on a webcam. Mindy stated, "My introduction video I recorded 5 times, but by the end of the week, I was just like this is how I feel, and that was it." April explained, "I think I just became more comfortable on the videos and would talk more and became more laid back, more comfortable."

Introductions

The first assignment for students was to watch an introductory video by the instructor. The instructor presented herself, a summary of the class structure and objectives, and some personal feelings and perspectives as the instructor of the class. One student, Emily, commented on the effect of watching the introduction, "I liked it. It was nice to actually be able to see my teacher instead of just getting emails."

After watching the instructor introduction, students were then required to record their own introduction video to post on the class website. The students were asked to create a video-message introducing themselves, explaining where they were from, discussing their hobbies and interests, relating something unique about themselves, and explaining why they chose their

major. After the students posted their individual introductions, the instructor sent a personal reply to each student. The following student comments are related to how the students felt that the instructor knew them following the exchange of introductions. Corinne related, "I'm a painter, so to use an analogy, it was like having several little paintings, each one a snapshot, so I'm sure she knows me from the video." Emily explained, "I feel like she knows me on a personal level because of the introductions and through emails and questions. I've never had any other teacher have me fill out a form about who I am and what I like."

Most students did not watch introduction video-clips by other students as it was not a requirement, however at least one student did. April especially enjoyed one of the student introductions and said, "She was really entertaining in her introduction and she really let her personality shine through in her introduction and I was just laughing when I watched it."

Video-reflections

A subsequent assignment also involved students producing video-clips using their webcams to reflect on readings related to the National Educational Technology Standards for Teachers. Students were also required to reflect on their own experiences with the use of technology in schools they had attended. Each student posted a video-reflection on the class website, and the instructor responded to each student with a video. The following is a transcript of a student video-reflection by Emily followed by the instructor video response:

This is assignment two in regards to the first question. Do I think my teachers have met the standards? No sadly. In high school or in college, the only exposure I have had to technology has been doing research in the library as well as using Blackboard here at BYU. There is also a dance and technology class offered here but I haven't had the opportunity to take it yet but I plan to. Question two. My answer is most definitely yes. In

our world today technology is ever changing and a huge part of our everyday life. I think

it would really help my students be better members of the community and better artists to

be able to connect with different people in different professions and be able to articulate

and express themselves in dance and in technology.

The instructor responded positively:

Hi Emily. I just listened to your video-clip on the standards and I am really glad that you

have been able to familiarize yourself with those standards. One thing that I really liked

that you said on your video was that you can learn to communicate with people in person

and through the use of technology and I'm glad you made that connection early on. I

think it's unfortunate that your teachers haven't used technology but it is fortunate that

you are learning and understanding its importance. Hopefully this assignment helped you

understand the national standards better.

Class Discussion about Blogs

For one of the assignments, students were required to create a blog based on their own

creative idea of how a blog could be used for educational purposes in a high school setting.

Before actually creating a blog, students participated in a class discussion on the topic. Students

presented their own original ideas on how a blog might be used to enhance education and

commented on the ideas generated by other students. They used this process: In the week that

was set aside for the class discussion, students first viewed the class discussion website to see

who had already posted a video-clip. Students were required to watch the two most recently

posted clips and then post their own video-clip. In their video-clip students were required to

develop the ideas that the previous two students had presented. Students were then required to

present their own idea in the same video-clip. Every student in the class posted a video-clip.

The following are excerpts from a section of the class discussion with transcriptions from videos by four students who followed each other in the discussion. These excerpts from the transcripts show how an idea generated by one student was discussed and developed by other students in video-clips. Kirk discussed the ideas he had seen presented on the previous two video-clips, and then he presented his own idea:

My idea was for students every day or week or whenever they would want or need to, to go onto the blog and anonymously rate the class, rate the activities that we're doing, rate the homework that we're doing, rate if they're learning, if they're having fun, to be as honest as possible so that me as a teacher would be able to make the needed changes and do better. I think that would really improve the class as students express their true feelings and let me know anonymously what we can do to change. So that's my idea, thanks.

David watched Kirk's video-clip as well as the one previous, and commented on both and presented his own idea. In the following transcription for David, only his comments about Kirk's idea are included. David has positive comments about Kirk's idea and develops the idea with his own suggestions:

Kirk talked about evaluations and I thought that was a really good idea because often I think teachers if they want to improve their course they need to know how students are receiving it. And I think one of the things that you could to with those evaluations is to not just evaluate whether they liked it one to five or things like that but evaluate how much they learn. Because school is for the students, students aren't for the school. And so if we can set up the schools so that it helps students to learn and we're seeing that these projects or assignments are helping them to learn then we can see that they are successful.

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If projects and other things aren't helping them learn then it's not doing the job that it was intended.

Mary continued to discuss Kirk's idea. Mary is a non-traditional student who has teenage children, and based on her own experiences had some concerns:

Okay Kirk's idea was to anonymously rate the class. I liked that idea except that since I'm looking to teach junior high and high school and not college. I just am concerned about what kind of things you would get on your posts of, I hate teacher, you're stupid and I think we should just play and never have homework again. Just because I have teenage kids and those would be the kind of things my kids would write. So you know other than that it seemed like a good idea. I would love to hear what my students had to say but most of the constructive information if I asked my kids how well I'm doing as mom they would all say you should never have chores for us to do. I once had my son who I said, "Do you really expect that I would do everything, clean the house, have dinner, do all your laundry and you wouldn't have to do anything?" and he said, "Yes." So you know high school students and junior high school students tend to be a little more self-centered and if you make me work you're obviously a bad teacher so. I don't know how the maturity level may be in high school it would be easier than in a junior high. Not sure in junior high the kids could formulate any kind of things that would be of use to a teacher but probably they would.

Claire continues the discussion of Kirk's idea and addresses Mary's concerns with some of her own suggestions:

She made a good point. She said that evaluations on a blog in middle school/high school might not really be effective because if you make the students work they think you're a

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bad teacher. But I think if as a teacher if you made a very specific survey maybe if you asked them specific questions that they had to answer on the blog I think it could be effective and I think it's important to understand what your students are feeling about your class and to know that they can give you some good feedback. Yeah the majority of it will probably be like she made us write a paper and it was really hard and we hated it. But I think sometimes they'll give good constructive criticism every now and then. And sometimes they'll tell you what they really liked about the class.

The students seemed to be enthusiastic about their ideas and also discussed and developed the ideas of other students with a certain level of enthusiasm. However, students did not seem to be talking directly to other students, but rather they were talking to the instructor about their classmates. April explained the experience, "But it did seem weird to me when we responded to each other's videos because it seems too forced, like, not natural … In my mind I never really classified them as group work because it felt so individual." Camille related, "It felt like sometimes with the webcam clips and the video-blogs they would leave, it was just kind of like I'm just getting the assignment done. And so they didn't feel like they were interacting, I didn't feel like I was ever interacting with other students."

In addition to how students felt about their interaction with other students, some students also expressed some problems in relation to group discussions in emails to the instructor. Emily sent the following in an email: "Last week I submitted my post regarding Google Earth before Wednesday and nobody else from the dance and theatre group had posted. I checked again at about 1:30 on Wed. and still no posts." Jane emailed the following: "No one else in my group has posted any ideas, so I can't respond to anyone. Should I just respond to someone of another group?"

Video-mail versus Written Assignments

Several other assignments in the class also required students to submit their responses in the form of a video presentation. In the interviews, students made comments about how they felt about video-mail assignments in contrast to traditional written assignments. Rachel appreciated the opportunity to voice her ideas out loud:

It's faster I think than typing. If you type it, you have to think it out a little more clearly and organize your thoughts better whereas if you're just talking and typing just takes longer. I think sometimes you can express yourself better, your tone of voice, or the way you say things. It's easier to communicate with you and the teacher.

Mindy said, "I feel I can express myself better verbally than in writing, so I think I could express myself," and April stated, "It just feels more like a conversation when I was recording it." Some students explained that they still organized their thoughts on paper before creating the video-mail presentation. Corinne said, "On the webcam, I had to write an outline down. I am a talker, so I'm sure she thought I was very expressive!" Emily stated, "Each time I had a layout and it was like I was making sure I hit all of my points. But I think if the more I got used to it, I would be able to just talk into the webcam."

Video-responses from the Instructor

In all of the assignments in which students were creating video-mail presentations, most also included a video-mail response (video-response) from the instructor. For most assignments, the instructor also sent a video-mail to the whole class summarizing the learning experience. The instructor also sent students a personal video-mail at midterm discussing how well they were doing in the class up to that point and to encourage them. With all of the video-mails that students received from the instructor, students were forming impressions of the instructor, and

connections between the instructor and students were being formed with varying degrees of success. Students commented on their differing impressions of the instructor and how they felt about their connection to her. Corinne gave her opinion:

> Well I had no idea of her as an instructor before, and it was very nice to get to know her, it made it very personal I think. She posted personal responses on each of our personal sites, which I thought was labor intensive. I really liked that, I thought it was very personal.

> Camille said, "I felt really connected to her, I felt she was very approachable…I felt her

feedback was really good in the videos she would leave for me. I felt really connected to her."

The next two comments from students are less positive. Rachel explained, "I felt like she was

committed to the class, but I don't feel any personal connection." April stated, "I think she was

very nice and professional and polite, but for me she didn't come across as particularly outgoing

and happy and I think that would make it more useful, for me, easier to connect with an online

professor."

One student, Rachel, had a negative experience with the instructor feedback. The

feedback was in response to Rachel's video-post in the class discussion about blogs, and Rachel

described the experience:

> This is where I felt like there was miscommunication between me and the teacher. I talked in the blog discussion about how it is hard to make sure that students will want to use the blog instead of just being required. And I talked about how we have to be careful to make sure use it is used in a productive way, whereas the teacher emailed me back and was not understanding why I didn't like blogs or like to use them, and I do think they can be used well, but it has to be effective use, not just using it. That's something where I felt

like she didn't get what I was saying, and she said I could email her back or whatever, but it's just like, it doesn't matter.

Another student had a particularly positive experience with feedback from the instructor. According to Camille, the positive nature of the experience was motivational to her for the rest of the semester:

> Especially when I did the video with movie maker. She was very praiseworthy and loved my video and told me how much she loved it and how great it was and that made me feel really good and I wanted to do my best in the future. Because she had been so kind about that assignment, I wanted to perform better in the future as well.

Connection to the Instructor and to Other Students

The varying perceptions that the students had of the instructor seemed to lead to varying levels of trust and varying levels of willingness to seek support. Some students felt a connection to the instructor and felt that the relationship was helpful, while others did not connect well with the instructor and did not develop any level of trust. Corinne explained, "At first I was really embarrassed about how little I knew about technology, but I quickly got over that because she was pretty reassuring, and so there was a trusting relationship." However, April expressed, "I felt like my teacher, she was very nice, but I felt very estranged from her, like she wasn't just really into helping."

The students also had varying comments on their connections to other students in the class. Seeing students in video-mails had some effects, according to their remarks. April related her experience in watching the videos of other students:

> Yeah, I think I got to know them better, because if I wasn't required to watch any of their videos, I would have never taken an interest in any of my classmates. I definitely started

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to recognize a few names because we would post around the same time, so I recognized a

few names and then I got to know them better through their personalities, they would

shine through on the video-clips and just through watching them.

Rachel echoed some of April's sentiments:

I think, definitely better than text comments and something that was kind of interesting

was usually they posted at their house so you could see a little bit of the background or

something so that was kind of fun just to see people in their natural habitat.

Some students had connections with other students outside of the class that impacted

their class projects and connections. Corinne explained, "We would remind each other about

deadlines, we have a Wednesday class and I'm kind of the mum of the class, so I would say, you

still haven't posted so get on there and get it done." Rachel stated, "I felt more connection with

the people I knew before and this kind of strengthened it."

Student Collaboration

Although student comments suggest a certain level of connection to other students

through the group video-mail discussions, the students mostly felt like they missed a good

student–student relationship. Camille explained, "I missed the interaction I think with fellow

students. You had that a little bit via webcam but you just watched what they recorded, you

didn't ever have, I ask a question, you respond. That kind of interaction I definitely missed."

Rachel expressed, "You didn't really get to know everyone and sometimes you had to watch

blog posts, but you never had to watch all of them, so I don't think you got as big a view as you

could have in the class maybe."

Several students independently suggested one way that they thought student interaction

might be better in the online environment. Emily suggested, "If you were paired with a buddy

throughout and they were able to look at each assignment and they were able to get to know you and your major and your subject matter, even with Google Earth and the wiki." Independently, Camille suggested, "Maybe if you were paired up with one person, and they leave you a video and then you leave them a video…it would have felt more like I was…working with a partner and having a real conversation."

Chapter 7: Instructor Perspectives

This section relates experiences and stories about the IPT286 online section from the perspective of the class instructor. Instructor perspectives are in the form of comments made by the instructor in the instructor class blog journal, transcriptions from weekly meetings with the researcher, comments from the final interview with the instructor, and video-mail responses to students.

The Instructor

For the duration of this study, the instructor is named Amanda. Amanda was a graduate student in the department of Instructional Psychology and Technology at BYU. Amanda was born in Central America but was raised in California in a Spanish-speaking home. After graduating from high school in Ventura, California, Amanda completed a BS in Teacher Technology Education with an emphasis in Multimedia and also a BS in Spanish Translating and Interpreting. She spent one year teaching ESL and English in a high school in California, and then one year teaching Technology and Computer Applications at a middle school in Utah. During that year she applied to the IP&T graduate program at BYU and was accepted. Amanda stated that "IP&T was a perfect fit for me since I knew I loved education and technology."

As part of the IP&T experience Amanda has participated in various projects, including the evaluation of a project in Africa, the development of a museum kit, and the design and development of a blended learning course. Regarding her experiences in the IP&T program, Amanda said that they "expanded my views of education and specifically the power of applying technology in education."

As a graduate student, Amanda had been teaching sections of the IPT286 class for several semesters and had been deeply involved in the continuing design of the class. Because of her

experience with teaching the class, she was asked if she was willing to teach the class in Winter 2009 using the Asynchronous Video Learning Model. She agreed and worked closely with the researcher in designing the course content so that the principles of AVLM would be woven into her normal teaching methods relating to content, activities, and assessments. Amanda was also assigned to teach a face-to-face section of the IPT286 class in the same semester.

Introductions

Amanda recorded a video-mail that introducing her to the class. In the introduction she introduced herself, a résumé of the class, her expectations and objectives, and general thoughts that she wanted to relay to students at that time. In this video-clip that was posted on Google Videos, Amanda began by smiling and introducing herself as the teacher. She described her experience in teaching the class for four semesters, and gave a background to her own education at BYU as an undergraduate. She described working as a teacher in a high school in California and a middle school in Utah before realizing that she wanted to return to school. She discussed her choice with enthusiasm:

> At that point I decided that I really enjoyed technology and education so I decided to work on my PhD in technology and education which I have been doing for the last three years, so I love technology and I have so many stories where technology has helped me teach my students and has helped me make my instruction a lot more effective.

Amanda continued by sharing her hopes for the students in the class. She then explained some major elements of the class, including the use of the CTLVideoBlog web tool for video communications, the way students would use Blackboard to navigate through assignments, and the types of emails she would be sending to students to reinforce assignment requirements and due dates. Amanda also assured students that she would answer any questions throughout the

semester and that she wanted to form a good relationship with them. At the end of the clip, she cheerfully stated, "I want to get to know you through video. I would like you to get to know me too, and like I said before feel free to contact me if you have any questions and I am looking forward to this next semester, thanks!"

Through the majority of the video introduction, Amanda was looking directly at the camera, and her physical features, including hair and eye color, were easily discernible. In her introductory video, she came across as having a calm and pleasant demeanor. After watching Amanda's introduction, the students were then required to send an introduction video-mail to Amanda. The following is a description of one of the student introductions. The student introduced herself and her major (dance), and then with a large grin described some of her hobbies as being reading, baking, running, and studying physical health issues related to movement capacities of the human body. With obvious feeling, she then told of how her experiences with a helpful mentor had inspired her to become a dance teacher:

> I started dancing when I was little but really got into it in high school when I was on a dance company. My advisor was really good and helpful and just helped me to get through some of those hard times in high school and so I decided that's what I wanted to do was to be a dance teacher at a high school and to be in charge of the dance company and to help students with the difficult time they're having and to help them to feel better about themselves and I think dance is a great way to do that.

This student went on to tell how she was planning on becoming a missionary for the LDS Church in Chile, but that just before she was going to leave last year, she got engaged, and was at that point soon to be married. She finished by expressing her excitement for being in the online

class. In her video-clip, the student appeared to be upbeat and vibrant with a cheerful personality. Amanda had positive reviews regarding these student introductions:

> The student introductions were very helpful in giving me a sense of their personality and main interests. It provided a point of connection so I could start remembering their names and their overall enthusiasm. It also gave me a reason to relate with them and reply back with a video of my own that commented on their hobbies, places they lived, or their educational motivations. When you get to know people you have to start somewhere and the video introductions were the first exchange in a conversation that took place between me and my students. In a sense, it justified their humanness and didn't just assume that they were homework completers by default without a life history, without likes and dislikes and without passion. Also, part of the video introduction asked students to state what had motivated them to choose their major. This gave me great insight into what interested them about education and how I could help them see how they could use technology to achieve their goals or to become even more motivated.

Although Amanda felt that she knew her students well in part due to the introductions, she recognized that the students did not get to know each other very well. In her journal, she made a suggestion of how students could get to know each other:

> It would be a good idea to modify the first assignment to include watching introductions in each student's group. Students would go into their assigned group for the course, and watch the introductions posted by their fellow students in the group to get to know them and to encourage interaction early on in the course.

Overall Perspectives on Using Asynchronous Video

With the AVLM being a new and untested model of education, Amanda was observing its effects for the first time and early in the semester made several statements in her journal regarding the use of asynchronous video:

1. Video allows students to display their emotions and attitudes more visibly.

2. Students CAN collaborate successfully through the use of asynchronous video.

3. The tool used in the course makes a big difference to student's attitude towards the course.

4. Students seem not to mind how long or short their post is because they seem to enjoy talking and sharing their opinions on certain subjects.

5. I think it is important to find ways to wrap up assignments and give some conclusions about issues that are discussed in class after students have submitted their posts.

6. It is a little frustrating to set detailed grading criteria for video-posts. As a result it can be difficult to determine grades based on a scale. It is easier to just say done or not done.

All of the above observations concern major topics of discussion related to AVLM that are developed further in other sections of this study. In effect, after a short time in the semester and without prompting, Amanda had articulated many of the core tenets of AVLM. All of the above points relate to the use of video for student assignments.

Video-essays and Video-responses

The original AVLM model included the principle of requiring some assignment products to be in the form of video-essays rather than written essays. With this method, instead of reading student responses to assignment questions, the instructor sees and hears the student. In theory,

the added verbal and nonverbal signals associated with a video can give the instructor a more realistic idea of student progress and ability. Amanda explained how the extra information in video-essays guided the feedback process:

> One thing I like about video is that it allows me to see fairly easily when students are confused or unsure about the assignment or a concept. Some people got some extra feedback when I got the feeling from watching their videos that they were a little lost.

In one assignment, students proposed their plans for a movie project allowed. Amanda contrasted the student video-essays with her normal practice in the face-to-face class:

> A video allows the instructor to see student's passion for their idea, and to assess how feasible the idea really is. In the past, I have done proposals through writing, but this takes longer to grade and it is more difficult to grasp the student's idea by just reading the words off the paper.

The instructor was required to watch many of these student video-essays, and produce many individual video-responses. In one assignment students were required to produce a movie clip using Windows Movie Maker on a PC or iMovie on a Mac. The instructor watched and evaluated the student movies, and then produced an individual video-response for each student. The following is part of a video-response that one student received from Amanda:

> I watched your movie and that was really great. It was so interesting and I learned something new from watching it. I want you to know you are the only one in the class who got 100% on the movie project. I was impressed that you were able to do your citations as well. I really have no other feedback on that, I thought it was great and I might even use your project as an example for future classes.

A common question or concern that has been voiced relating to AVLM is whether watching and responding to so many videos is an impractical burden. Amanda was in the situation of teaching a normal face-to-face section and an online section using AVLM, and discussed the issue of time commitment in her journal:

The question came up about whether I felt the face-to-face was more work or the online was more work. I have to admit that the online is more work, but not by too much. I have responded to each student assignment in the online version individually and that has made it feel like it is more work. However, I feel like I know my online class better and that each student in the online class is getting more out of the instruction. When I say more, I mean that the instruction is more tailored and more detailed to fit each student's needs.

In the post-semester interview, Amanda was asked about the issue of the time it took to record responses for every student. After her experience with both classes over the whole semester, she summarized her perspectives:

I think in a way it took less time because the video-posts take less time to watch and grade but I think in the end it equals out. On the one hand the video-posts take away from grading each assignment but that time I took grading also added some time. It wasn't a huge amount of time. I don't think in comparison they are too far different from each other. They are just different so it's difficult to equate it.

Also in the interview, Amanda pointed out a side effect of the individualized nature of video-responses to each student:

However, the tailored instruction and dialogue also means that not all student's are getting the same video-responses so students who might benefit from a comment posted

on another student's video-blog are not benefiting from that dialogue since they don't

have access to that blog. I try to overcome that barrier by posting class announcement for

the entire class to watch. That doesn't always include every idea, but I try to refer to the

big ideas that came up in the individual posts.

In the process of watching and giving feedback on so many video-essays from students

Amanda reflected on some particular effects. One of the effects that Amanda discussed was the

process and value of listening:

I have learned that one of the greatest affordances of the video medium is that it forces

the instructor to listen. Listening is such a valuable part of teaching. For some reason,

many teachers understand the value of lecturing and talking to students, but the value of

listening is often times overlooked. Why is that? Listening is extremely valuable in

teaching. It tells the instructor if the student understands and it gives the instructor ideas

on which way to steer the instruction to illuminate student understanding. I love that

video forces me to listen to each student more closely. This is a great affordance of the

video tool and I hope more teachers begin using video in face-to-face courses as well.

Assignment Structure and Grading Issues

With any new method or new use of technology in education, there may be benefits, but

there are usually also side effects resulting in new questions or problems to solve. This was

certainly true with the implementation of AVLM. In one particular statement, Amanda affirmed

the benefit of video-essay assignments, but then described one issue regarding the length of

student video-essays:

Sometimes the great thing about video-blogs is that it encourages students to describe

what they are trying to communicate in a better way. However, sometimes an assignment

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that might only require a one-minute post might be interpreted by the student as a five

minute-post. It is a little annoying when video-posts are exceedingly long when all that

was required is a short answer. Is there a way to help students know how in depth their

posts should be?

In effect the issue that Amanda raised was one of structure: How should we structure the

assignment to result in students producing video-essays that have the correct length? That was

just one question that was raised. Another issue that Amanda experienced and articulated relates

to evaluation, grading, and feedback requirements. In the final interview, Amanda expressed her

concern about the grading of video-essays:

I think one thing that is hard is establishing grading criteria that isn't just all or nothing. I

noticed that in my face-to-face class that I was a little more critical about the grades I

gave. I would give more like 78% instead but online it was harder to not just be like 0 or

100%, and I kind of don't like that. There is a wide range between all and nothing. And I

do think there is a range between 0 and 100 and sometimes with video it's a little harder

to establish that criteria and grade more specifically.

Progress Reports

Halfway through the semester, some confusion about dates left Amanda with a situation

of having no assignment planned for students during one week. Amanda used that situation to

develop an important principle for the AVLM model that involves individualized progress

reports to students:

I decided to give my students a progress report this week and make this a week in which

they can catch up, redo other assignments, do the bonus assignment or just get ahead. I

like the idea of a progress report, especially for online purposes. Many students come into

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a course thinking that teachers are not flexible, tolerable and just plain strict. The

progress report allows students to see how willing I am to help them improve past

assignments and customize the course to their needs. It lets them know that the instructor

is interested in a two-way dialogue and not just assigning tasks from a one-way stream of

communication.

In one example of a progress report, Amanda expressed her perspective in an extract of a

video-mail to a student:

First of all I reviewed your grades and you are doing really great in the class. It looks like

you have turned all the assignments in so far, and I was also able to watch your video-

post on your video-proposal and so I have changed your grade on that. So let me know if

you any questions, but I think you are doing great in the class.

Class Discussion about Blogs

In the second half of the semester, one assignment required all students in the class to

participate in an asynchronous video discussion about the use of blogs in secondary education

classes. Amanda reported her thoughts on the experience and in particular the effects of having

the students post video-mails in which they responded to the ideas of other students and also

described their own ideas:

This week I graded my students' assignment to discuss ideas on different blog uses in the

classroom. It was interesting to observe how students reacted to each other and how the

discussion unfolded with the use of video. The best part of using video is that students

felt more comfortable critiquing each others' ideas. The students alone did a very good

job of noticing controversial issues and bringing up the pros and cons to these types of

situations.

After commenting on the positive aspects of the assignment, Amanda commented on what she thought was missing from the experience: "One thing I would do differently with this assignment is that I would have a part two in which students have to watch all the posts and do a final post on what they saw and heard from everyone during part one." This was an important observation related to the structure of video-mail discussions that had an impact on the practical design principles involved in implementing AVLM.

Asynchronous Video Tools

Amanda also made many comments related to the tools used to implement AVLM. There were several options, but in the case of IPT286 at BYU, it was decided to build a dedicated web tool that was named CTLVideoBlog. The CTLVideoBlog was developed by the Center for Teaching and Learning at BYU. This web tool allowed students to login and have access to group pages between many students and private pages between themselves and the instructor where video-mails were posted and viewed. The website functioned well, but Amanda made several observations about weaknesses in the tool such as that there was no way to delete a video once it had been posted, no way to upload a video (it only allowed recording directly from a webcam), and no way to let the instructor know if students had watched announcement videos, or video-responses to student assignments.

Amanda also reflected on the relationship between tools, strategies, and educational outcomes. In her final interview she developed the idea that there is a need to better understand and develop methods and strategies to gain the most benefit from the tools and technologies:

> Just talking to a video doesn't do anything. It's just a tool but it's how you structure the course and the steps that you have students do and you know how we did like those online discussions and people would post and someone else would listen and post and all

those different steps put together is how learning happens. It builds the learning

community. But just the video alone doesn't do anything. But it really opened my eyes to

the possibilities of video and my class was really effective I thought and how little I had

tapped into those methods and if I had tapped into that a little more, how effective that

would be. I never thought it would be so powerful. It could be more powerful if we

develop the pedagogies.

Amanda had many positive comments to make concerning her experience with

asynchronous video tools, but she also voiced some concerns. She described one situation in

which she was trying to support a student:

I have been having a problem with one of my students. She has completed an assignment

but was unable to complete one specific task. It has been frustrating because she has

already viewed the screen-casts of the step-by-step descriptions on how to do the task and

it still is not helping. It is a hard realization, but there is a point in which asynchronous

video is not enough. It would be great if I could remotely control her computer and have

a synchronous conversation with her at the same time. Sometimes asynchronous video

just isn't enough.

Relationships and Levels of Trust

Another issue that Amanda noticed during the experience was the level of trust or lack of

trust that she felt that her students had with her as an instructor. Because she also taught a face-

to-face version of the class at the same time, she was able to contrast the situations:

I have noticed that students tend to trust the teacher's ability to help them in face-to-face

settings. However, this trust is many times lost online. I noticed that when some students

found themselves in sticky situations, they would say something like, "I'll ask my

husband or I know someone who can help me with this." Throughout the semester I tried to write my students emails asking them trust me enough with their problems, having faith that I could help them (even at a distance). I wonder how many students had problems that they didn't even ask me because they didn't trust that I could help them at a distance.

Students may have perceived the instructor in different ways, and may have developed varying levels of trust, but through the semester Amanda felt that she had developed a strong relationship with all students, and in her final journal entry expressed her final feelings:

> With mixed feelings of happiness and sadness, the video course has now come to an end. I will greatly miss my students. I feel like I got to know them and will miss them just as much as my face-to-face students. It's not like I ever met my students in person. But it felt like we were connected in learning and understanding throughout the entire four months. I will miss them greatly. I know that many of them feel the same way I do. Some expressed their gratitude on their final post. I definitely feel that the purpose of the course was met this semester. Students learned how to effectively integrate technology in their instruction.

Chapter 8: Researcher Perspectives

A faculty member in the department of Instructional Psychology and Technology is responsible for leading the teaching of the IPT286/287 classes. The faculty lead teaches some sections of the classes and recruits graduate students in the IP&T program to teach the other sections. IPT286 sections are one-credit classes taught to pre-service teachers with secondary education majors, and IPT287 sections are two-credit classes taught to early education, elementary education, and special education teaching majors.

I had personally worked with the faculty lead for several semesters while teaching sections of the classes. In December 2007, the faculty lead asked me to teach an online section of the class in the Winter 2008 Semester. It was at this point that, in consultation with the faculty lead, I made the decision to pilot the use of asynchronous video as a central communications method. I designed the online class and pioneered the use of asynchronous video in Winter 2008. Following many lessons learned during Winter 2008 the method of using asynchronous video was improved, and I taught the online class for the second time in Fall 2008. During the second pilot, the Asynchronous Video Learning Model (AVLM) was conceived and articulated.

Following the advent of AVLM, it was decided the online class should be taught by a different instructor using AVLM so that an objective study of the model could be performed. I consulted with the faculty lead and then asked the graduate student known in this study as Amanda if she would be willing to teach the online class using AVLM as a model. Amanda agreed to be the instructor, and I then worked closely with her to help her make changes to her normal syllabus and class activities as necessary to implement AVLM.

During the semester, as Amanda interacted with online students as their instructor, I observed and studied the proceedings in a number of ways. It so happened that Amanda and I

worked in the same office at the Center for Teaching and Learning at BYU and the close

proximity allowed for many unplanned discussions concerning the class. In addition, as part of

the research process we had agreed to officially meet weekly to discuss the class. Furthermore, I

had access to observe the class blog pages in the CTLVideoBlog and was able to view video-

mail assignments by students and video-mail responses by Amanda. Throughout the semester I

kept a journal of my observations, thoughts, and notes from meetings with Amanda. The

information in the following sections is based on comments from my journal.

Introductions

Amanda related to me how she had received introductions from each student, and how

she had responded to every one of them. She told me some stories of unique things that the

students had related about themselves. Amanda enjoyed the experience and felt that she had a

good start in getting to know the students. This result is the same that I have had every time I

have used asynchronous video to send and receive introductions, so at least this element of the

model is showing itself to be consistent. These experiences have shown students to be willing to

share personal information and interesting insights through video-mail introductions.

In the course of the discussions that I had with Amanda, we both came to the conclusion

that there was a major weakness in the structure of the introductions. We realized that when the

instructor send an introductory video, and the students sent an introductory video in return, a

strong communications channel was created between the student and the teacher, but it was not

helpful in creating any channels between the students. Our discussions led us to conclude that the

structure should somehow require students to introduce themselves and respond to each other as

well as to the instructor. We felt that this would help students to relate to each other better in

later class discussion assignments. Previous to this study, AVLM already stated that students

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should introduce themselves to each other, but we had not yet structured the introductions to reflect the principle.

Technology and Tools

There were several times in the semester when issues with the technologies used in the class needed addressing. Early in the semester, a student had added the class and another had left the class but Amanda did not know how to update the student lists in CTLVideoBlog to reflect the changes. Then at a different time, Amanda posted a private video-response to a student in a group blog page by mistake. Posting to the wrong page proved to be frustrating as CTLVideoBlog did not have a function for deleting or moving a video-post. This elicited a discussion about whether a delete function should be added to the system. The problem that I discussed with Amanda is that I was not sure that students should be able to delete posts whenever they wanted. After the discussions it was decided that an instructor should be able to delete any post, but students should only be able to delete posts within one hour of the original post time. A request was made to add this functionality to the next version of CTLVideoBlog.

Around the middle of the semester there was a problem where video-posts were not saving to the CTLVideoBlog correctly. This problem had also occurred in my own pilot classes previously from time to time. For the first version of CTLVideoBlog, the video recording and playback were handled by a free web plug-in. The videos were hosted by the producers of the free plug-in and not on BYU servers. Thus, when there were any problems with saving video-posts or playing them back, the issues were with the free web service that BYU had no control over. While observing these problems, the Center for Teaching and Learning, with my assistance, was searching for a better solution. In the next version of the CTLVideoBlog video-posts will be hosted and managed on BYU servers.

Amanda made other observations about the CTLVideoBlog tool in relation to class

discussions. One of the issues that we discussed in depth was about how students were not

directly addressing each other in class discussions. When students discussed the ideas of other

students they directed their comments to the instructor and not to each other. Amanda and I both

agreed that one of the reasons for this was due to the graphical design and layout of the

CTLVideoBlog. On every blog page, a new video-post would be put at the top of the page, thus

the order of posts on the page was newest at the top and oldest at the bottom. Every post was an

individual thumbnail at the same level as shown on Figure 4.
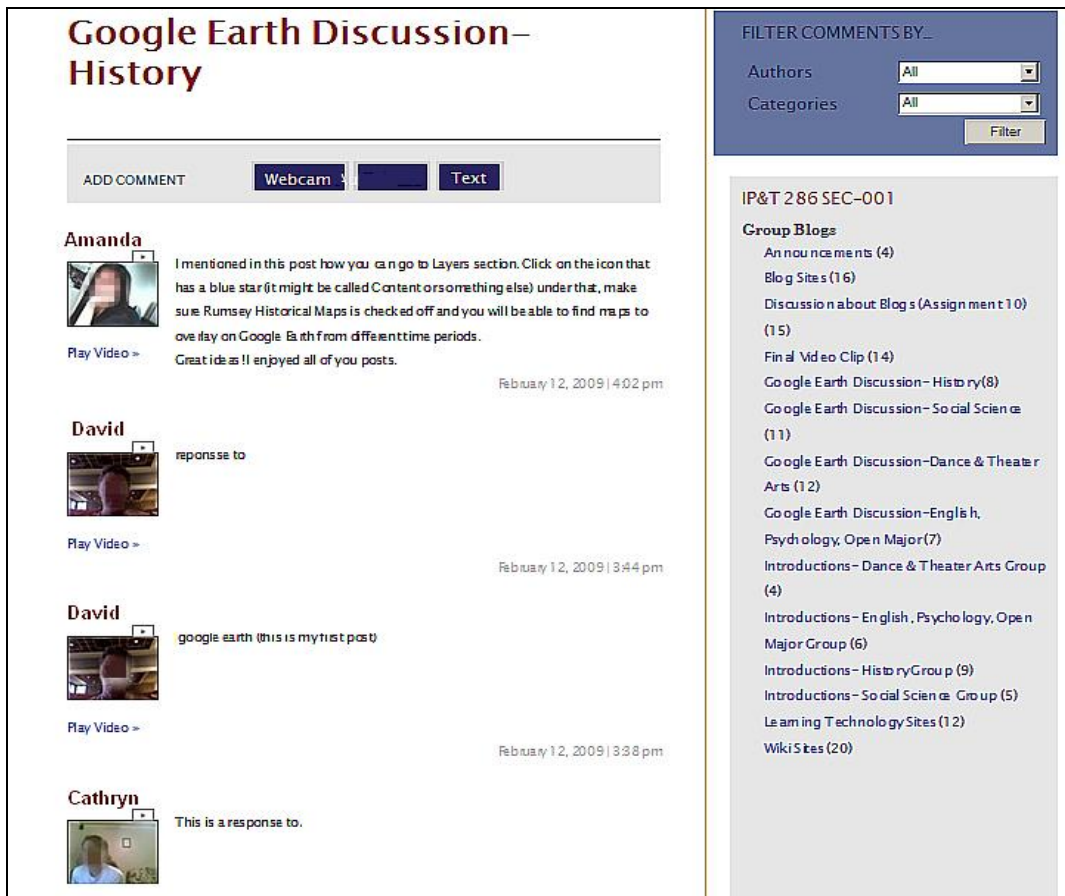
Figure 4. CTLVideoBlog group blog page.

In Figure 4 it can be seen that posts are all individual and at the same level. In this format, there is no graphical representation of a threaded discussion. When a student responds to another student, the response is not graphically shown to be related to the original post. The thumbnail for each post is simply inserted in order of when it was posted, and not in any relation to any other post. Figure 5 is an example of how the next version of CTLVideoBlog will look with the ability to relate a video-post to an existing video-post. In effect a student will be able to reply to a video-post directly. In the version used in the class being studied, students were required to add a text comment explaining to whom they were responding.
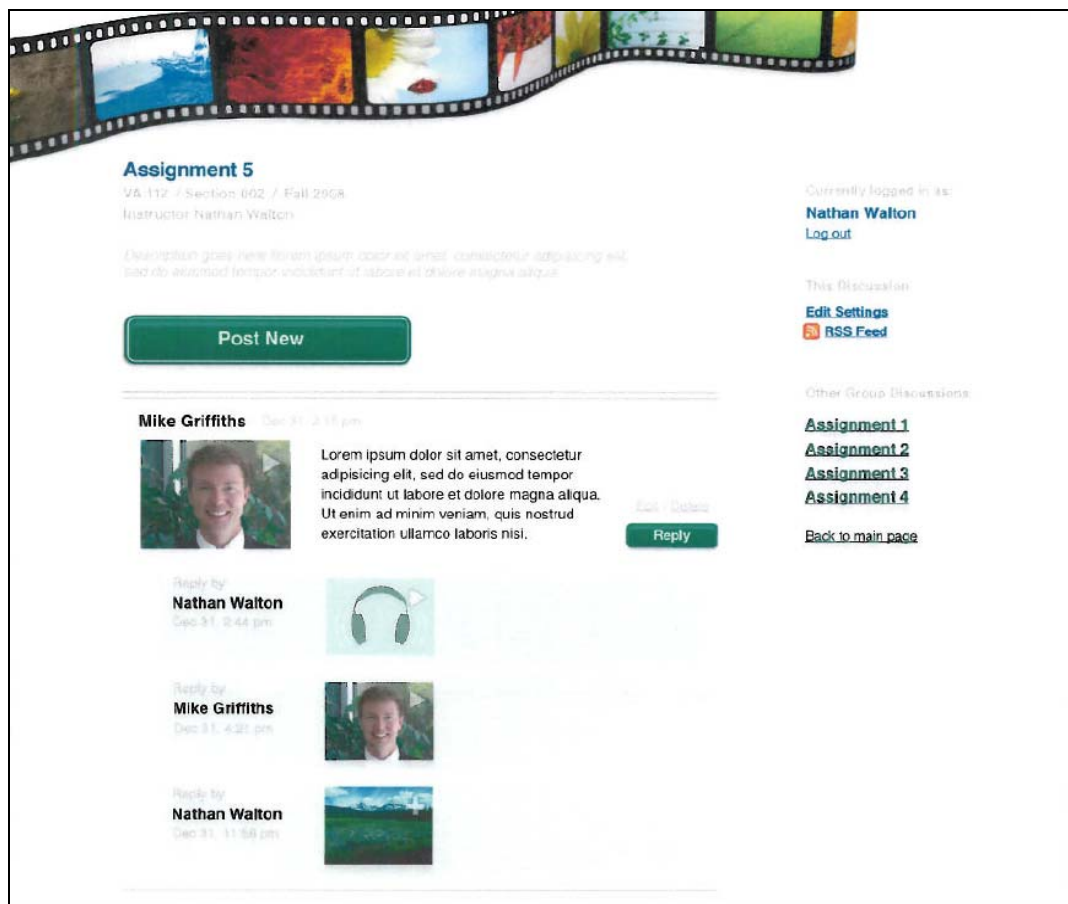
Figure 5. CTLVideoBlog version currently in development.

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The next version of CTLVideoBlog will show the thumbnails of video-responses as subordinate to the original post. In the next version, a post could be a completely new thread, or could be part of an existing thread. In discussion with Amanda, it was felt that changing the graphical representation of a discussion will help students know that they are replying directly to another student, rather than talking about another student.

All the issues related to the tools have led me to think that the technology needs to be very well developed and easy to use for asynchronous video to be a great experience. I think that most computer users of this generation of students are used to technology being imperfect, but if there are more than just a couple of problems in one semester then those frustrations can negatively impact the learning experience. To avoid some of the issues, I have noted that it would be good practice to create some safety nets:

1. Ensure that a standard web camera is used.

2. Ensure that the software works with all web browsers on at least the Mac and PC platforms.

3. Effectively manage expectations from the beginning.

4. Implement a backup plan that is communicated and understood from the outset.

Student Introductions

In addition to the weakness in the CTLVideoBlog that impeded student-to-student dialog, Amanda and I discussed another strategic issue that related to the same subject. We both agreed that how the class introductions were structured prevented students from having direct dialog with each other in class discussions. I observed the video-reflections in the small group and class discussions, and even though each student was required to respond to another student's ideas,

they were responding in third person, and they seem to be talking to the teacher or the whole class but not directly to the person they were responding to.

In the class introductions, the students were required to introduce themselves to the instructor and the class, and the instructor responded to each student individually. This very first act created the environment where students perceived their relationship to be with the instructor and not with other students in the class. Amanda and I both agreed that somehow students needed to engage each other during the initial introduction assignment. In fact, the original version of the AVLM stated that students should introduce themselves to the instructor and to each other, but we had not yet implemented a practical way of achieving this principle. We discussed the different possibilities, such as requiring students to randomly select a certain number of other students in the class and to respond to their introductions directly. In a small section of maybe up to 20 students, it may also be practically achievable to require students to respond to every other student introduction. That might create a hectic first week of a class with hundreds of video-mails being watched and responded to, but it might still be a fun way to create a student–student dialog environment from the start.

I recognized while observing the student videos in this class that there was a failure in the area of student–student engagement and dialog. Students certainly did learn from each other, and I observed how ideas were discussed and built upon, but students simply did not address each other directly in any assignment in the class.

Instructor Summaries

After the first four assignments in the semester, Amanda and I met for our regular weekly interview and she described an experience that I had not considered before. Amanda decided to send a video-mail to all students in the class summarizing the learning experience and her

evaluation of the first four assignments. In this video-mail Amanda discussed how she felt the class had fared in the assignments and explained her own perspectives and experiences in relation to the assignments.

Amanda expressed in the interviews and in her own journal that she felt that it was a critical component of the learning experience to provide a well articulated summary and conclusion of sections of the class. Her rationale was twofold. Firstly, she believed that it was good to have an instructor summary to help students understand the purpose of the assignment and to reinforce the learning, and secondly she believed that it is important to wrap up an assignment for closure. Amanda felt that students need a clean and distinct transition to the next assignment or section of the class. After discussing these ideas with Amanda and contemplating her views, I was also convinced that summarizing is an important principle for online education that was missing from the original AVLM and should therefore be incorporated into the model.

Video-essays

Midway through the semester, I happened to be in a meeting with a consultant from the BYU Center for Teaching and Learning who is a specialist in assessment and evaluation. He was presenting information related to variety of assessment types. While he was presenting these assessment types, I was contemplating how video-mail responses fit within normal assessment techniques. What struck me as interesting was that video-mail responses did not seem to fit exactly in any of the types being presented, but shared some attributes from two types of assessment in particular. These two types of assessment are written reflective essays and oral examinations. In a video-mail, students reflect on some question or summarize their understanding of some subject or another as they would be asked to do in a written essay, except they do not write. In oral examinations students are required to orally present their responses to

some question or their understanding of some topic or another. This could be in some part reproduced with a video-mail response. The major difference is the ability in an oral exam that the evaluator has to dynamically change the situation by asking follow-up questions and so forth.

I spent some time with the CTL Consultant discussing these thoughts and trying to articulate the properties of a video-mail response and how it fits in the lists of standard assessment types. Together we tried to find a name for a video-mail response that would adequately describe its function. After some deliberation we felt that the term video-essay was the best fit. In effect, this term defines a video-mail response as being functionally similar to a written essay, but in orally presented video format. We also discussed the properties of an oral exam and concluded that it may be possible to use video-essays to fulfill most of the same assessment properties of an oral exam. An oral exam using asynchronous video may be possible by structuring an assignment or exam in a specific way:

1. Instructor creates a rubric for a video-essay.

2. Student creates and sends a video-essay.

3. Instructor views and assesses the video-essay.

4. Instructor sends video feedback to student with an adapted rubric for a second video-essay (probing student to elaborate on any principle or content that the instructor felt was not adequately represented on the first video-essay).

5. Student creates and sends a second video-essay.

The process could be repeated many times, especially if it is a midterm, and there may be many ways to structure the process with time delays of hours, days, or weeks depending on the assessment objectives and on other factors. I considered this idea and the articulation of the term

video-essay to be somewhat of a breakthrough and an important development in the understanding of the capacities of asynchronous video and its role in the learning process.

Knowledge of Students

In several of my discussions with Amanda, she expressed how receiving videos from students was helping her to better evaluate the students and to better understand them. For one assignment, students were required to create an instructional movie using free movie editing software. Before they started creating the movie, students were required to post a video-mail where they discussed the educational objectives they were going to use, what free software they were going to use, and they also discussed their idea for the content of the movie. In the face-to-face class, Amanda required her students to write their ideas and she expressed that she noticed a big difference in the result of having a video-mail instead of a written response. She stated that she found it easy to understand how well the students had understood the assignment and this allowed her to be precise in her video-response to each student. She also expressed that it was much easier to tell how confident and passionate the students were about their ideas than it was in written responses. She also said it was simple to tell whether the proposals were reasonable and achievable. Amanda felt that it was easy to give them feedback on their ideas through video.

Amanda's experience was similar to my own in all of the previous pilots. Her experience confirmed my point of view that students reveal more information through video-mail assignments than through written assignments. This leads to a greater understanding of student ability level, confidence, energy, commitment, excitement, and so forth. Having a greater knowledge of each student allows an instructor to individualize responses and feedback according to individual needs and it will theoretically improve the learning experience.

Another aspect of videos that would help the instructor to know the students is to require reflections from students in addition to responses to questions. One student that I interviewed at the end of the class was comparing how well she thought Amanda knew her with how well she felt that the instructor knew her in another class. The student felt that she was better known in the other class because the instructor required many reflections from students. The student felt that she revealed more about herself in her reflections as opposed to just answering questions. When this was explained to me it made a lot of sense, and I feel that AVLM should include a recommendation for some video-mail assignments to be personal reflections related to class topics that allow students to express themselves in ways that the instructor will know more about them as individuals.

Midterm Feedback

In one interview, Amanda told me about a mistake she had made in the class schedule that turned into an opportunity. Apparently, Amanda miscalculated the schedule and suddenly found herself with a week where no assignments were due. At that point she decided to send each student a report via a video-mail where she gave each of them a summary of their grades up to that point, and how she felt they were doing in the class. She gave each student encouragement in addition to a summary of their work.

When the experience was described to me, I instantly thought that it was an important discovery. I had not thought of doing midterm summaries when I was the instructor, and I think this would have improved the student learning experience. Giving one or maybe two status reports to students in a semester is something that I thought would help students understand where they stood and how they needed to change (if they did need to change). I also thought that the students would be motivated by seeing the instructor positively communicating status and

words of encouragement. Sending a student status report to each student once or twice in a

semester is a principle that will be added to the AVLM and it is interesting to note that this

development only occurred due to an error in the class schedule.

Class Discussions

Towards the end of the semester, students participated in a class discussion about the use

of blogs in education. During the week of this assignment, I regularly looked at the

CTLVideoBlog page where students were posting their video-reflections. After only four

students had posted, I noticed something important that impacts the practical implementation of

the AVLM. What happened is that the first student commented on mine and Amanda's ideas,

and then added his own idea. The second student then did the same, and his own idea was to

allow students to post anonymous comments about the class and activities to help the teacher

know how well it was going and what to change. The next student (who was a mother of teenage

children) commented on the issue by saying that although it was a good idea, teenagers would

just selfishly say how they don't want homework or to make any effort. The next student, who

was commenting on the last two students, picked up that debate and stated that although

teenagers would respond selfishly, it may work if there were very specific questions to answer

rather than a free-for-all.

I was observing a good discussion where points of view were challenged and debated in a

respectful and friendly manner. However, I felt that the assignment had been badly structured,

and I would really have liked the whole class to hear the whole discussion. In this assignment,

students were not required to watch any posts after theirs. Consequently, they did not observe

what happened to their idea thread after they had posted. This could be resolved in many ways.

One way would be to require students to watch every clip at the end of the assignment. Another

way would be to get students to watch every clip as soon as it is posted. This is another large change that will be made to the model.

Instructor Work Patterns

In one particular interview, Amanda explained how she was organizing her time to be able to work through student assignments and her video-responses. She described how she typically worked in organized chunks. She was attempting to watch student video-essays, or review student projects, and respond with her video-responses in one session. She would wait until assignment deadlines had passed before starting the organized chunks of assessment and responses.

Amanda's pattern of operation contrasted with my own work pattern when I was using asynchronous video in the earlier pilot classes. I usually tried to evaluate student work and to respond as soon as I could after the students had submitted their work. I preferred to check for student work frequently at different times during the work day and also in the evenings and on weekends. My own preference was not to allow a stack of assignments to build up so that I did not have to spend long sessions working through many assignments at one time. Students received feedback from me usually within 24 hours after their work was submitted.

Both approaches seem to work for instructors, and different instructors will certainly have their own preferences. However, one of the principles already included in AVLM is that of rapid learning-centered feedback. It would be best to further define the rapid feedback principle to 24 or perhaps 48 hours as rapid feedback is motivational and improves student learning by the responses being given while the assignments are still fresh in the minds of the students.

Chapter 9: Inductive Analysis Results

Following the initial inductive analysis process where cover terms and relationships were discovered and described in spreadsheet format, a doctoral student in the IP&T program served as a peer reviewer and provided a substantial and detailed review. The researcher took the review into consideration and considerably revised the cover terms, domains, and sub-domains following recommendations from the peer reviewer. The peer reviewer then reviewed the revised spreadsheet and made further comments and suggestions. These further recommendations were considered and the spreadsheet was further revised and refined.

A taxonomy of cover terms, domains, and sub-domains was then described and reviewed, and changes were made over multiple iterations following several discussions with the peer reviewer. Although the researcher and the peer reviewer agreed that the resulting taxonomy was a reasonable and logical system of how to describe the results of the study, it was also understood by both that the taxonomy could potentially be arranged in many other equally valid ways.

The inductive analysis and following peer review process resulted in the taxonomy shown in Table 10. Following Table 10, evidences from the inductive analysis that have the most impact on the AVLM are discussed. These evidences are divided into three groups that are based on three of the cover terms from the taxonomy. The areas of discussion are the role of technology, pedagogical concerns, and the importance of relationships. The impact of the results of the inductive analysis is discussed further in context of the overall study in the discussion section.

Table 10

Taxonomy from Inductive Analysis Process

Cover term	Domain	Sub-domain	Comments
Technology	Video-mail (v-mail)	Using a webcam–initial feelings	11
		Using a webcam as part of class	7
		Willingness to use v-mail again	5
		Sensing personality in v-mail	9
		Sensing emotion in v-mail	17
		Expressing emotion in v-mail	17
		Potential application of v-mail	3
		CTLVideoBlog tool	6
	Problems/support		7
Structure/Pedagogy	Importance of method		16
	Online class/face-to-face		6
	Student flexibility		10
	Instructions		3
	Group discussions	Compared with face-to-face	21
		Group commitment	7
		Collaboration	5
		Peer review	2
		Student pairs	4
	Assessment and feedback	Feedback from instructor	12
		Assessing knowledge/commitment	3
		Grading	5
		Summarizing	3
		Progress reports	2
Relationships	Instructor–student relationship	Seeking help from instructor	7
		Trusting the instructor	5
		Instructor responsiveness	4
		Instructor–student relationship	15
		Instructor knowing students	18
		Individualized communications	12
	Student–student relationship	Knowing peers via v-mail	12
		Comfortable with peers via v-mail	4
		Student introductions	4
		Students support for students	3
		Feedback from students	8
Learning outcomes	Overall class		9
	Assignments/activities		13
	Effectiveness of discussions		21
	Enthusiasm for discussion		10

Role of Technology

     Many comments that surfaced as part of the inductive analysis were related to the role of technology. Several major elements of the class experience were related to technologies that were new to participants. Most participants were not familiar with webcams and the CTLVideoBlog class website was new to all participants. In the case of using webcams, students expressed that they had experienced a mixture of excitement and anxiety when initially presented with the idea of using a webcam as part of the class. Only a few of the students had even used a webcam before, and none of the students had used one in an educational setting. One student, Camille, said, "I was kind of excited about it just because I'd never used a webcam before so I was a little excited to learn about it. I was a little bit nervous that I wouldn't be able to figure it out, that I wouldn't really know what to do with it, but I was excited to learn about it."

     The whole concept of asynchronous video was new to all participants. Following some initial reservations, students were all able to fulfill their webcam-based assignments with only a few isolated technical difficulties. Although the students were experiencing a new and unusual instructional technology, most of them enjoyed producing video-mails and some felt that the use of webcams would become more natural with continued practice. Emily expressed her feelings in the following terms: "I feel like if I were to do this in more classes if it was required to be on a webcam I would get better because each time."

     The introduction of such a different technology as asynchronous video and the new website led to some interesting new perspectives on instructional design, in particular the relationship between pedagogy and technology. In her journal, the instructor discussed how seeing the potential of the new technology made her think that it could be a powerful educational technology if there could be more development of the strategies and pedagogies:

But it really opened my eyes to the possibilities of video and my class was really effective I thought and how little I had tapped into those methods and if I had tapped into that a little more, how effective that would be. I never thought it would be so powerful. It could be more powerful if we develop the pedagogies.

The instructor was highlighting that the technology opens up new possibilities for learning, but that the ideas and methods for these new learning possibilities need to be further developed. In other words, instructional methods and pedagogical approaches should drive the use of the technology rather than being driven by the technology. The introduction of a new technology is useful to elicit awareness of new pedagogical principles, but the focus should be on the learning principles and not on the technology.

An example of this principle from the study involved the CTLVideoBlog tool. As discussed in the Instructor Perspectives section of the study, the nature and structure of the CTLVideoBlog website tool influenced the student perspectives on their relationships to the instructor and to other students. The instructor also stated that the tool prevented her from doing certain things that she thought would be beneficial:

The video blog tool we use to teach this course is very useful but it also has some limitations. I think it would be good if the video blog allowed the user to make folders to keep certain discussions organized and separated from other discussions. The folders would allow me to ask my students to post a reply to my announcement so I can know that they listened to it. Maybe even a thumbs up or down mechanism would help to let me know they listened to it.

When an instructor makes statements concerning the affordances of instructional technology tools, one response would be to simply explain that the tool has certain limitations

and that the instructor simply must work within those constraints. If this is the case, then the

limits of technology tools will limit the pedagogical approaches that can be applied to the

learning experience. It was the determination of the author of this study that limitations in

technology should not be allowed to drive the overall learning experience, but that the most

desirable pedagogical methods for a given learning situation should drive the design of the

technology. Therefore in the case of this study, the CTLVideoBlog tool should be redeveloped to

implement pedagogical practices that have been found by this study to be valuable to the

learning experience. The discussion section of this study recommends changes to the principles

of the AVLM, and the CTLVideoBlog should be changed so that all of the principles I the model

can be practically implemented.

Pedagogical Concerns

The previous section discussed how pedagogy should drive the design of technology

tools and not the reverse. This section discusses some of the pedagogical concerns and ideas that

surfaced in the inductive analysis that impact the AVLM design theory or that were insightful

ideas that might be useful in some learning experiences.

Video-proposals. The first pedagogical principle discussed is that of video-proposals.

Theoretically, video-essays by students are designed to help instructors more fully assess the true

level of knowledge or ability of the students. In her journal, the instructor commented about the

effectiveness of videos by students by discussing the idea of video-proposals:

> I like the idea of video-proposals, where students can propose a project using video
>
> before they begin working on it. A video allows the instructor to see student's passion for
>
> their idea, and to assess how feasible the idea really is. In the past, I have done proposals
>
> through writing, but this takes longer to grade and it is more difficult to grasp the

student's idea by just reading the words off the paper. The video allows you to see a more complete picture of what the student is proposing to create.

It appears that at least for the type of assignment that the instructor mentioned, the student videos were effective and achieved the desired objective at least from the perspective of instructor assessment. The rationale for having students make assignment or project proposals using video-mail is dependent on the course objectives and the pedagogical approach of instructors and designers. Therefore, video-proposals will not be added to AVLM as a core principle, but rather be suggested as a possible pedagogy that may be useful.

Progress reports. One notable idea surfaced due to an error in the class schedule. As also noted in the Instructor Perspectives section, halfway through the semester the instructor realized that there was one week where no student assignments were planned. The instructor used the opportunity to give every student an individualized video progress report. The following is an extract from one of the videos that the instructor sent:

> First of all I reviewed your grades and you are doing really great in the class. It looks like you have turned all the assignments in so far, and I was also able to watch your video-post on your proposal and so I have changed your grade for that. So let me know if you any questions, but I think you are doing great in the class.

These individualized progress reports allowed all students to know their standing in the class and to adjust performance accordingly if necessary. The reports were also a visual reminder that the instructor knew them as individuals in the class. These reports were considered in this study to have been useful to the extent that the principle of individualized progress reports in video format at least once in a semester will be added to the AVLM design theory.

Summarizing. The idea of summarizing arose due to a pedagogical concern of the instructor. The instructor was experienced in teaching in a face-to-face environment and was used to taking class time to summarize and wrap up assignments. In the online class, the instructor felt that the summarizing principle was missing from the experience:

> I just really like to at the end of a unit in face-to-face to talk to the class about how we end this topic and what do we get out of it and I feel that was lost in the video. I don't think that it necessarily has to be, it was just that we didn't plan for it.

AVLM had a provision for individual feedback to students, but did not account for the need to summarize an assignment or a unit in a class to achieve closure and reinforcement of the learning experience. In a face-to-face class, wrapping up an assignment for the whole class is a fairly standard procedure. AVLM should therefore be modified to include a provision for assignment summarizing.

Collaboration. For the group assignments in the class, students were required to build on each others' ideas, but were not required to jointly produce anything. Group production assignments are obviously more difficult to achieve in an online class than in a face-to-face classroom, but they are possible, and some students expressed that they would have liked to have worked in a group to produce something. Mindy discussed the issue as follows: "The nature of our group was responding to each other—and you can only do so much. In the classroom, you can participate together in the creative process of creating the assignment and when you collaborate at that point of the process." Based on these comments by the students, further implementations of AVLM, where appropriate, should be designed to include group projects where the objective is for the group to creatively produce something.

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Peer review. In this implementation of AVLM there were no assignments where students were required to review the work of other students. One particular student, Emily, mentioned this lack as a negative. She stated, "With that, we didn't have an assignment to have our peers look at that at all and I kind of wish that we would have." Peer review is one way to help achieve valuable student interaction and collaborative learning. Designers using AVLM should consider using student peer review as part of assignments to achieve student peer learning.

Student pairs. There were two group assignments in the class that allowed students to interact with each other, and students did have fruitful discussions, but students consistently commented that they would have preferred more student–student support. In interviews, several students independently made the suggestion that each student be paired with another student from the beginning of the semester. April suggested, "Maybe it would be really good if you could give each other peer mentors at the beginning . . . and then you could respond back and forth to each other's ideas and that would build a closer relationship between two students in particular." This is certainly an idea worth exploring, but there are questions as to how it might operate. For example, would students select their own peer mentor or would it be assigned? What would happen if some students did not like their selected peer? The principle of student pairs should be given more thought and could be implemented as part of AVLM if an instructor or designer considers this to be a desirable part of the learning experience.

Importance of Relationships

The process of inductively analyzing participant experiences, discovering domains and sub-domains, and organizing them into a taxonomy over several iterations led to the discovery of one theme that seemed to permeate the analysis process. Many of the discovered cover terms, domains, and sub-domains were closely related to or impacted by human relationships. The

inductive analysis uncovered a total of 326 unique thematic statements by participants. The cover term of relationships includes 11 sub-domains representing 92 unique thematic statements. In addition, nine other domains and sub-domains representing another 75 unique thematic statements can also be considered as relating to or impacting human relationships. It was concluded after the analysis process that relationships between student peers and between the instructor and students are of critical importance to the overall learning process. Student experiences suggested that these relationships impacted the students' level of learning and also their level of enjoyment and motivation in the class. The experiences also suggested that the style and personality of the instructor had a large impact on the instructor–student relationships.

The relationships between the instructor and the students varied. Some students reported that they had a good relationship with the instructor. Emily stated, "I thought she [the instructor] did a really good job. I felt like even though it was an online class I had a personal connection with her." However, other students did not have such a positive experience. Rachel responded, "I felt like she was committed to the class, but I don't feel any personal connection."

There are many examples of experiences from the inductive analysis that show how relationships impact the student experience. For example, all students who were interviewed responded positively regarding the individualized video-feedback. Even Rachel stated, "Whenever I got feedback it was helpful, I understood why I got the grade." In addition, Camille responded, "Well, I know the teacher would go on and she would watch our videos and leave feedback, I really appreciated those." Camille went on to describe a particularly positive experience with feedback from the instructor. She explained how the positive nature of the experience was motivational to her for the rest of the semester:

She was very praiseworthy and loved my video and told me how much she loved it and how great it was and that made me feel really good and I wanted to do my best in the future, because she had been so kind about that assignment, I wanted to perform better in the future as well.

Other experiences showed how the state of relationships negatively impacted the student experience. For example, most students did not seek support from the instructor. April said, "I felt like my teacher, she was very nice, but I felt very estranged from her, like she wasn't just really into helping." Students need to know that they are able to get support from the instructor, and they need to sense that they are not imposing when they ask for help. In this class it appeared from student comments that they did not really understand how to seek help, or they were not sure how the instructor would react. Emily explained her experience as follows: "She always said like you can email me if you have any questions, but it would have been nice to know that I hadn't been imposing, like, if she even said these are the hours that are good for me."

Students will not be likely to ask for help unless have a certain level of trust that the instructor wants to help, is willing to help, and is able to help. Students reported varying levels of trust in terms of how comfortable they felt with the instructor. Mindy stated, "I felt like my teacher established herself enough where I felt comfortable." Other students reported that they did not feel that level of trust or comfort with the instructor. When the instructor was asked about how she felt that students trusted her to ask for assistance, she expressed a mixed reaction:

I felt some more than others. This was one thing I had a big problem with too is I always wished my students would trust me more. Some students trust me more than others. Some students were like oh I can just have someone else help me and I really wanted to help

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them even though it was all online, I could still help them. In their head, I was just there to grade and give feedback but I don't think they felt that I was able to help them.

In effect, the instructor correctly identified that some students trusted her more than others even though she was willing to support them. A practical implementation of AVLM should plan for enough communication between the instructor and the students at the beginning of a semester so that students will develop more trust and be more comfortable in seeking support.

There was one aspect of class relationships that changed the nature of the learning experience. Through the analysis of all participant experiences, it was clear that students rarely felt connected to other students. One reason that students did not establish connections between each other is that at the beginning of the semester the students only introduced themselves to the instructor, and they only received an initial response from the instructor. This created the impression for the students that they only had a learning relationship with the instructor. This instructor–student relationship changed the whole experience for students as it changed how they approached group discussions. Mindy explained that she felt isolated from her classmates:

Because of the nature of the class, I felt like it was me and the instructor. I would do an assignment and I would only think that she's the only one who's going to view it and she's the only one that responds and so I didn't really consider my classmates.

In effect, when responding to the video-essays that their peers had produced, students acted as though they were talking to the instructor about their peers' ideas. Students did not act as though they were talking to their peers directly.

Only a small portion of the participant experiences that were analyzed in the inductive analysis process have been discussed in this section. All of the evidences analyzed have led to

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one of the conclusions in this study that the relationships that are formed in a learning

environment are as important to the learner as the structure and pedagogical design that are

employed. In addition, it has been concluded that the relationships are heavily impacted by the

style and personality of the instructor.

Chapter 10: Deductive Analysis Results

The following section summarizes the results of the deductive analysis that was performed to discover evidences related to the four major research constructs of immediacy/closeness, affective expression, open communication, and group cohesion. A section is presented for each one of the four constructs.

Evidences of Immediacy/closeness

Evidences of immediacy/closeness are in the form of comments made by students and the instructor in interviews and in journals. Immediacy/closeness is defined as communication behaviors, some visual and others vocal, that enhance closeness to and nonverbal interaction with one another. It is observed when students know the instructor, feel they are known, receive personal and meaningful feedback, have a sense of well being, and seek support. The student interview questions designed to elicit comments about immediacy/closeness are shown in Table 11 with examples of student comments. Negative comments are shown in italics.

Levels of immediacy/closeness depended on how the instructor is perceived by students. In the case of the online class using asynchronous video, perceptions were based on the videos and other electronic communications that the instructor sent to the whole class and those that the instructor sent to individual students. According to the definition of immediacy/closeness in this study, evidences are divided into identifiable elements:

1. Students know their instructor.

2. Students feel that they are known by the instructor.

3. Students receive feedback that is personal and meaningful.

4. Students have a sense of well being.

5. Students seek support.

Table 11

Student Interview Questions Related to Immediacy/closeness

Question	Positive	Negative	Example of Student Comments
How connected did you feel to your professor(s) through this class format?	4	2	I felt really connected to her, I felt she was very approachable *She was very nice, but I felt very estranged from her, like she wasn't just really into helping.*
How did the video sharing contribute to that connectedness?	5		Well I had no idea of her as an instructor before, and it was very nice to get to know her, it made it very personal I think. A lot of them were short and to the point, just like any feedback you would get from a teacher, but yeah, I did. Comparing it to another class it's more feedback.
Think about a face-to-face class that you have had where you feel like you had a good relationship with your professor. What similarities are there between the professor–student relationships?	4		I'm in a geography class with 150 students, and he seems to care about the students. I've emailed him 3 or 4 times, but I don't have the same relationship that I have in this class. So I think in that sense this could be more effective. Well, I feel like she knows me on a personal level because of the introductions and through emails and questions and things which in the other class, I've never had any other teacher have me fill out a form about who I am and what I like. And so I think all teachers should do that.
How much and in what way(s) did the instructor-to-student relationship affect your desire to perform well in this class?	2		She was very praiseworthy and loved my video and told me how much she loved it and how great it was and that made me feel really good and I wanted to do my best in the future. Right, at first I was really embarrassed about how little I knew about technology, but I quickly got over that because she was pretty reassuring, and so there was a trusting relationship.

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Knowing the instructor. Students received many videos from the instructor. Some of the videos were announcements or assignment summaries that were sent to all students and some were individual video-responses. The instructor also sent many emails and students had access to her personal blog. In interviews, the students made the following comments on their perception of how well they knew the instructor specifically through seeing the videos. Corinne said, "Well I had no idea of her as an instructor before, and it was very nice to get to know her, it made it very personal I think." Camille stated, "Because hers was really a reflection of I liked this, or that was a really good idea, that makes sense to me. And I felt like I kind of got to know her likes and dislikes." Emily explained, "Yeah, I did. A lot of them were short and to the point, just like any feedback you would get from a teacher, but yeah, I did."

The previous students had positive comments about how well they knew the instructor, but the following student, Mindy, explained her experience:

Almost. The videos, that I saw of her, but I don't even remember what she looks like, so if I passed her on the street, I wouldn't know that I was passing her. I don't know if that's bad on me that I don't remember however many clips I've seen. I think there was enough connection in the moment for me to feel very comfortable posting myself online for her to view it, but it wasn't any more than that, and for me that was just fine.

The first three students state that they know the instructor in various ways. The last student begins by answering the question as to whether she knew the instructor by saying *almost*. This student had enough knowledge of the instructor to feel comfortable enough to send videos, but not enough to know the instructor in any deeper sense. Almost knowing the instructor does not satisfy the requirements of immediacy/closeness as defined in this study, and the practical

implementation of AVLM should be better developed to provide a better level of information about the instructor to the students.

Feeling known by the instructor. Students have no way of knowing how well the instructor actually knows them, but they get a sense of how well they are known by how they perceive the instructor reviews their video assignments and how they perceive the instructor views their other interactions. Students were asked in their interviews how well they thought the instructor knew them through the videos that they sent to the instructor.

Student comments on this topic included one from Corinne, "I'm sure she does now! I'm a painter, so to use an analogy, it was like having several little paintings each one a snapshot, so I'm sure she knows me from the videos." Emily expressed, "Well, I feel like she knows me on a personal level because of the introductions and through emails and questions…I've never had any other teacher have me fill out a form about who I am and what I like."

All students who made comments on this topic felt that they were known to varying degrees. However, the following student, Camille, felt that they were known better in another class where the instructor required many personal reflections from the students:

I did have to reflect a lot and write papers and he was reading those and so he kind of knew what my reflections on my teaching experience had been, what scared me about being a teacher and what I felt I was good at, so it was the nature of the assignments as well that helped him get to know me. I feel like I know the instructor more than she knows me, and that's because I think the assignments weren't really structured where she would—not reflections, more just ideas.

This last student was pointing out that in order to be better known by the instructor, assignments need to require students to be communicating personal feelings and insights as well

as ideas and standard responses to topical questions. AVLM should therefore articulate the

principle of personal reflections and insights by students as a feature of video-reflections rather

than just reflective ideas and answers to content-based questions.

Receiving individual feedback. Personalized feedback is one of the central principles

and requirements of AVLM, and it was therefore likely that there would be evidence of the

existence of this in practice. Whether the personal feedback is meaningful or not depends on the

view of the students receiving the feedback. To look at the evidence, first is an example of the

instructor responding to a student assignment in a personalized video-response. In the

instructor's individual video-response to a student video-essay, Amanda looks directly into the

webcam and in a warm and friendly tone of voice discussed the student's video:

Hi Charlene, I just got done listening to your response number two for the nets-t

assignment, and I have to admit that yours is one of my favorite ones to listen to because

you hit upon a lot of very important points, I really liked how you talked about the

responsibility and how important it is to educate our children in the school system about

their responsibility.

At face value, the comments on the video-responses by the instructor were personalized

and meaningfully discussed the ideas that the student had presented. According to the following

interview comments, student perceptions confirmed that at least for these students, feedback was

appreciated and in the second case, Camille expressed that the feedback was meaningful and

motivational. Corinne said, "She posted personal responses on each of our personal sites. I really

liked that, I thought it was very personal." Camille described her experience:

I felt really connected to her, I felt she was very approachable—I felt her feedback was

really good in the videos she would leave for me. I felt really connected to her. When I

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did the video with movie maker, she was very praiseworthy and loved my video and told

me how much she loved it and how great it was and that made me feel really good and I

wanted to do my best in the future, because she had been so kind about that assignment, I

wanted to perform better in the future as well.

Sensing wellbeing. This is an attribute of immediacy/closeness that is not easy to observe

or measure. It is associated with whether students feel a certain level of assurance or comfort in

their relationship with an instructor. In other words, students should perceive that the instructor is

genuinely looking out for them and is interested in their welfare as students in the class. The

following students made statements that seem to suggest a level of connection or trust in the

instructor–student relationship. Corinne described her relationship with the teacher:

Amanda was wonderful…she went out of her way to walk me through things. At first I

was really embarrassed about how little I knew about technology, but I quickly got over

that because she was pretty reassuring, and so there was a trusting relationship.

Camille said, "I felt her feedback was really good in the videos she would leave for me.

So yeah, I felt really connected to her." In her comments, Camille linked the positive connection

to the good feedback that she received and Corinne linked it to the help that she received. It may

be that individual circumstances play a large role in the perception of student wellbeing rather

than the regular communication processes that are required by AVLM. Whatever the reasons for

the sense of wellbeing for some students may be, other students, while not expressing anything

negative, clearly stated that this connection did not exist for them. Rachel expressed, "I felt like

she was committed to the class, but I didn't feel any personal connection." April explained, "I

think they have to be vibrant and friendly even through video because I think she was very nice

and professional and polite, but for me she didn't come across as particularly outgoing and

happy." April suggests that it takes a certain personality type to make her feel connected and comfortable. There is then the question of whether online classes using AVLM should have an instructor that is genuinely vibrant and friendly, or if that personality would only suit some students and not others. AVLM should at least address the issue of instructor style in the role of creating immediacy/closeness.

Seeking support. A fairly direct source of evidence for immediacy/closeness as defined in this study is whether students seek support from the instructor. In interviews, while discussing their connection to the instructor, the following students made comments related to how they sought support. Camille reported, "I felt really connected to her, I felt she was very approachable. I could email her whenever I needed to when I had questions and she would respond really quickly." April, on the other hand, did not feel the same connection. She said, "I felt like if I asked her for help…I would just feel stupid. I don't know. Because I felt like my teacher, she was very nice, but I felt very estranged from her, like she wasn't just really into helping." In addition, Emily stated, "She always said like you can email me if you have any questions, but it would have been nice to know that I hadn't been imposing, like, if she even said these are the hours that are good for me."

Only the first of the three students expressed a willingness to seek support. Both the others were not sure enough or were not willing to seek support. This evidence suggested that for some reason, a majority of students were not inclined to seek support from the instructor in the class. The evidence from the student comments was corroborated by evidence from comments by the instructor. In her journal, the instructor also expressed that she felt that some students did not trust that she would or could be able to help them:

I felt some more than others. This was one thing I had a big problem with too is I always wished my students would trust me more. Some students trust me more than others. Some students were like oh I can just have someone else help me and I really wanted to help them even though it was all online, I could still help them. In their head, I was just there to grade and give feedback but I don't think they felt that I was able to help them.

It is important that students feel confident enough and trust the instructor enough to seek support. While it is important for students to make progress on their own, it is also important that if they do need assistance, they receive the help that they need to effectively improve their knowledge, skills, or attitudes.

Evidences of Affective Expression

Evidences of affective expression are in the form of perceptions and comments made by students and the instructor in interviews and in journals. Affective expression is defined as the expression and reception of emotions that are associated with or usually expressed and understood in settings of close physical proximity. Specific examples of affective expression are humor and self-disclosure. Self-disclosure is described as a sharing of feelings, attitudes, experiences, and interests. The student interview questions that were designed to elicit comments about affective expression are shown in Table 12 with examples of student comments. Negative comments in the table are shown in italics.

Table 12

Student Interview Questions Related to Affective Expression

Question	*Positive*	*Negative*	*Example of Student Comments*
Do you feel you were able to sense emotion?	6	1	And I could sense a lot of excitement
			Yeah, they all seemed really pleasant people
			Not necessarily. But I think a lot of that just had to do with a lot of the attitude was "when you get in, leave my video and get done because I want to get the assignment done."
Do you feel you were able to express emotion?	6	1	Yeah, I felt like I was able to express myself well as if I was in person.
			I feel I can express myself better verbally than in writing, so I think I could express myself.
			There were a few times where I felt like I was misinterpreted though, I think there was a miscommunication a few times that happened because in class you can clarify and be like "oh do you mean this?" Whereas in the video blog is just your post and that's it and so any clarification has to be through another post or a text comment that can take a while between posting like hours or days.
Did you find information about others in their video-clips that helped you feel comfortable conversing with them?	4	2	She was really entertaining in her introduction and she really let her personality shine through
			Just by the way she did her assignments and her comments, I felt like ours were similar.
			No, not really. I didn't really feel a community with the class, and I think part of that was that we didn't have to watch everybody's posts so I only saw a few people's every once in a while.

The existence of affective expression can be measured to a degree in terms of how well students feel that they are able to project themselves, and how well they feel that they know the other students. According to the definition of affective expression in this study, evidences are divided into identifiable elements:

1. Students share information and emotions.

2. Students receive information and emotions.

3. Students feel comfortable communicating.

Sharing information and emotions. To illustrate the way that students expressed themselves in video-essays, the following is a summary of the communication by a student, whom we will call Abigail, in her video-essay that was part of the class discussion about blogs. In this video, Abigail speaks quite quickly and appears to be energetic and excited about her comments. She changes her tone of voice quite often as she is explaining her thoughts and ideas. She moves her eyes quite a lot, and also opens them wider at certain points of her discussion. She moves her eyebrows a lot and turns her head from time to time to glance at her notes. Abigail uses her hands to gesticulate when she is explaining ideas and feelings. She smiles at various points and appears to be in a positive mood throughout the video. Overall, Abigail exhibits a very expressive face, body language, and tone of voice.

With this description it seems fairly self-evident that students were able to express themselves in video-clips. The instructor, who watched and interpreted the videos, confirmed that from her perspective, "the video was good because you could watch and see people's emotions or passions." In their interviews, the students unanimously declared that they felt that they were indeed able to express themselves and that they preferred being able to express themselves verbally. The following are three examples of the student comments on the topic.

April affirmed, "Yeah. I think I was able to express emotion through video, through clips."

Rachel explained, "You can express yourself better, your tone of voice, or the way you say things. It's easier to communicate with you and the teacher. And they get to know you better. I felt like I was able to express myself well as if I was in person. Furthermore, Mindy related, "For me, I have an easier time verbally expressing myself than writing it out…because I feel like there's another way of thinking when you have to write it out and I'm not good at that."

The ability to express emotion, passion, personality, and so forth is a fundamental principle of the AVLM model. All data collected suggested that in this principle, asynchronous video works well and no changes have been suggested.

Receiving information and emotions. Students watched videos from the teacher and from other students, and they were asked whether they felt that they were able to sense emotions and so forth. According to the following statements, some of the students stated that they could, and others felt that they could with some videos. April expressed, "I could sense the teacher's. I think some of the students I could. Some of them just seemed really, just kind of removed, just trying to finish the assignment…I think some of them I could and some of them not." Corinne also stated, "Definitely from the other students, some of them. I think in that way as far as an engaging tool the video probably is better." Also, Emily said, "I could sense a lot of excitement… So I guess I felt like when I watched her videos I shared that same excitement that she felt."

Not all students felt that they had sensed the emotions and personality of the other participants through watching their videos. The following student expressed that they had not sensed much about the others, but explains that the reason may be more to do with students not being motivated to express themselves or not being motivated to concentrate on watching the

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videos. Camille explained, "Not necessarily. But I think a lot of that just had to do with a lot of the attitude was when you get in, leave my video and get done because I want to get the assignment done."

This last comment revealed an important aspect of any learning model in that student motivation plays a central role in the actual results. All other data suggested that asynchronous video does have the capacity to convey excitement, passions, creativeness, and so forth, but if students are just completing assignments as fast as they can to get a grade without being motivated to immerse themselves in the experience, then the benefits are obviously going to be diminished. This challenge exists in any learning model, and AVLM should address student motivation as far as possible.

Feeling comfortable communicating. An important element of affective expression is that it leads to students receiving enough information about other participants to feel comfortable conversing with each other. As shown by the following comments, most of the students in the interviews expressed that in one way or another they were able to get to know other participants through the videos. April related, "She was really entertaining in her introduction and she really let her personality shine through in her introduction and I was just laughing when I watched it." Corinne said, "I think we probably got to know each other better this way. We are together in other classes, and we talk about what each they were wearing and what they looked like in the videos, I thought it was funny." Rachel stated, "A lot of them gave a little personal summary and I think that helped a little bit just to make connections between myself and them. Not just with their subject matter, but with their personal lives." Camille expressed, "From their clips themselves, yeah I could pick up on a little bit of their personality" and finally, Mindy reported,

"I've had some classes with some of them…it seemed to me like it was reflective of their personality."

At least one student expressed that she did not feel that she found information that led to being comfortable conversing. In this example, Mindy explained that this may have been caused by her perception that she was not communicating with other students and therefore did not care too much about getting to know them. She explained that she felt like only the teacher was going to see her video-responses, and she was not concerned about the other students. She stated, "Not particularly. Not that I wasn't relaxed, but I had assumed that just the teacher was going to look at it, so I frankly wasn't thinking about what the other students would think."

As also discussed in the Student Perspectives section of the results in this study, the fact that students felt that they had a relationship with the instructor but not with the other students was a particular weakness of how AVLM was implemented in the class. The principles and practical applications of AVLM should be adjusted to ensure that students do create strong connections with each other as well as with the instructor.

Evidences of Open Communication

Evidences of open communication are in the form of perceptions and comments made by students and the instructor in interviews and in journals. The definition of open communication is reciprocal and respectful exchanges, or a mutual awareness and recognition of contributions. Recognition is defined as the process of communication in support or acknowledgement of individual contributions. Specific examples would include explicitly expressing appreciation and agreement as well as complimenting and encouraging others. The student interview questions that were designed to elicit comments about open communication are shown in Table 13 with examples of student comments. Negative comments in the table are shown in italics.

Table 13

Student Interview Questions Related to Open Communication

Question	Positive	Negative	Example of Student Comments
How did you give/receive support (compliments, feedback, etc.) using video-clips?	5		They commented on mine and I would get the emails that someone commented on my video and I actually was intrigued and watched a few of them. And I thought that was fun, so I received support through that. We were supposed to comment on each other and so we would email each other saying, ok, I've posted, so you need to comment on my post, we were supporting each other that way.
Do you feel you got to know your classmates better through video-clips?	1	2	Definitely better than text comments and something that was kind of interesting was usually they posted at their house so you could see a little bit of the background or something so that was kind of fun just to see people in their natural habitat. *I knew another girl who was in my previous class so I recognized them, but other than that I felt like it was kind of random. So I didn't feel like I really built relationships.*

The existence of open communication leads to a supportive environment where student motivation can be positively impacted by feeding off each other. According to the definition of open communication in this study, evidences are divided into identifiable elements:

1. Students give/receive support/encouragement.

2. Students acknowledge/recognize other student contributions.

3. Students know each other.

Giving and receiving support and encouragement. Support and encouragement amongst peers is a desirable element of the learning experience. In the IPT286 class, there were no assignments that had a requirement for students to give support to their classmates, only that they were to give responses to the ideas of other students. However, when asked in the

interviews, the following two students felt that support had been present. April expressed, "They commented on mine and I would get the emails that someone commented on my video and I actually was intrigued and watched a few of them. And I thought that was fun, so I received support through that." Corinne stated, "We were supposed to comment on each other and so we would email each other saying, ok, I've posted, so you need to comment on my post, we were supporting each other that way."

Not all students felt the same level of support. For example, the following student, Rachel, stated that the responses did constitute some kind of support, but that the support seemed forced because it was a requirement of the assignment:

I don't know if this has a bad connotation…but I felt like there was obligatory support because the assignment said review two other people's clips and comment on it, and in that sense I felt like there was support when they were offering feedback.

Finding a way to help students support each other without them feeling that it is a requirement is a problem that has no easy answers. Nevertheless, any practical implementation of AVLM should attempt to provide opportunities for genuine support and encouragement without making them obligatory.

Recognizing others' contributions. When students recognize the contributions of their peers, they form supportive relationships that are helpful and motivational in the overall learning process. The following student stated how other students had made comments about the ideas that she had posted in a video-clip. April said, "I think one of them developed it more, and the other was like, oh, I like your idea."

In the video-clips that students posted for group and class discussions, they almost always complimented and then developed the ideas that they had listened to in the video-clips posted by

their classmates. However, students were not required to watch the responses to their own ideas and only a few students decided to watch responses of their own accord. This explains why only one student made a comment about how her ideas were recognized by her peers. In effect students did give recognition and acknowledgement, but most students never heard it. To ensure that students receive the recognition, the practical implementation of assignments in AVLM need to be structured so that students are required to view video-clips where their ideas are discussed by their peers.

Knowing classmates. This principle is related to how comfortable students felt communicating. In the context of open communication, the principle is that students form connections and relationships by getting to know each other. The next comment shows that some students felt that they got to know other students and that the visual element of the videos helped in that respect. Rachel reported, "Definitely better than text … Usually they posted at their house so you could see a little bit of the background … That was kind of fun just to see people in their natural habitat."

However, more students stated that they did not know their classmates. The two following comments suggest some different reasons for why they did not get to know other students, one being the randomness of the discussions and the other being that the class was structured so that the students mostly had a relationship with the instructor and not their classmates. Emily related, "I knew another girl who was in my previous class so I recognized her, but other than that I felt like it was kind of random. So I didn't feel like I really built relationships." Additionally Mindy stated, "No, I don't know if I would say that… Because of the nature of the class, I felt like it was me and the instructor."

From the students' perceptions of how they were able to express themselves in video, it would seem that it should be possible for students to form supportive relationships with each other. However, for this to be achieved the practical implementation of AVLM needs to be structured in a way that helps students to communicate directly more often and less randomly.

Evidences of Group Cohesion

Evidences of group cohesion are in the form of perceptions and comments by students and the instructor in interviews and journals. The definition of group cohesion is collaborative communication that builds participation and empathy between participants. Group members utilize unique knowledge and skills of individual members, synthesize diverse viewpoints, and create an integrative understanding of the situation at hand. The student interview questions that were designed to elicit comments about group cohesion are shown in Table 14 with examples of student comments. Negative comments in the table are shown in italics.

The principles of group cohesion are perhaps the most difficult to achieve in an online distributed learning environment. Any kind of group learning situation is by definition easier to implement when people meet in the same classroom. But notwithstanding the difficulties, it is a central tenet of AVLM that students should learn from their peers and interact in productive student communities. According to the definition of group cohesion in this study, evidences are divided into identifiable elements:

1. Students learn from other student viewpoints

2. Students integrate knowledge gained from other students

3. Students feel a commitment to a community

Table 14

Student Interview Questions Related to Group Cohesion

Question	Positive	Negative	Example of Student Comments
Compare group work through video to group work in a face-to-face class.	5		It was good in a way that it's recorded so you can reference back to it if you want to if there was a good idea. I think, what I liked about this, the design of this approach is that, one of the main reasons I signed up for this class was the flexibility
Was your group effective through video?	6		Definitely. If anything, I learned, they shared a lot of good ideas that I hope I can implement. It did push me to think of new things and I got other ideas from people that I might use.
Was it better/worse than a face-to-face class?	5	1	I think people who would be quiet in class participate a lot. Because in class you're not required to make comments but in video blog, you are and it's speaking too, it's not just typing. So I think people who either are intimidated or are a little bit more passive, it forces them to talk and I think it's a good thing to get. I think, a lot of times when I've met with groups, there's just a lot of time wasted … online all of that's eliminated. You just get right down to the point and do your assignments. *I got plenty of feedback, but as far as when you're in a classroom there's more interaction because there's just more.*
How did the video-clips affect your personal commitment to your group?		2	*It was a requirement, so I don't think so, I think the reason that people contribute is because they have to.* *No. I don't think so. I just did what I was supposed to.*

Learning from others' viewpoints. Potentially, one of the successful features of the implementation of AVLM was the sharing of ideas that occurred in the two group assignments. In one of the assignments, students were in groups of their major, and in the other assignment students were in a whole-class group. In both assignments students were required to present ideas and discuss the ideas that other students had presented. All students who provided comments on this topic agreed that they had learned from each. Corinne explained, "Yeah...for the blog assignment we were all together the whole class and I thought that was kind of interesting because how you were going to use it, it was very creative." Emily affirmed, "Yeah, I did [learn]. I feel like it was just a little taste of it." Camille stated, "Definitely... They shared a lot of good ideas that I hope I can implement." Rachel said, "Yeah, I did get some good ideas. I had to stretch my brain to think of something that people hadn't said before and so it did push me to think of new things and I got other ideas from people that I might use." Lastly, Mindy expressed, "Yeah. The ideas that they had… some of the other people had ideas I didn't even consider which was really helpful, it was like oh yeah, I could totally do that as well."

Integrating knowledge from others. It is fairly simple for students to express that they had learned from each other. To ascertain that students were able to integrate the ideas that they have heard is a little more difficult. The following statements by two students are at least an indication that the discussions and ideas of other students will lead to an integration of ideas into their own intentions of practice. April was very positive toward integrating others' knowledge:

> It was effective. When I watched the Google tools… one of the tools I came up with an idea of how to use it and the other one I just made up, but the other students, I think they had really good ideas. It was effective for me in learning other ideas. I think there was one that I genuinely was like I should do that in my classroom, I would like to do that.

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Camille described her experience:

I learned how important it is to collaborate as a teacher. That when I get to a school, I'm

going to have other teachers who will have good ideas and I shouldn't be afraid to ask

them what has worked in their classrooms and what would work better in mind.

Feeling a commitment to community. It is a principle of AVLM to create a sense of

community among students. There were several assignments where students generated ideas in

groups, and the class website CTLVideoBlog allowed students to observe almost all video-clips

that were posted for all assignments in the semester. But as far as having any commitment to a

community, all students who made comments on the topic stated that they did not feel any

commitment. Corinne stated, "As far as a need to contribute? It was a requirement, so I don't

think so, I think the reason that people contribute is because they have to." Rachel affirmed, "No,

not really. I didn't really feel a community with the class, and I think part of that was that we

didn't have to watch everybody's posts so I only saw a few people's every once in a while."

In this respect there was a complete lack of group commitment. In reality, even in a face-

to-face setting, some students will not feel commitment to a group while others will. Some of

this will depend on the style of the group assignment, and the personalities and motivations of

individual students. No model of instruction, including AVLM, has the power over student

personality and individual motivation. However the style and structure of group assignments can

be improved. Therefore AVLM should be adjusted to include better student peer interaction and

assignments that are calculated to more likely to engender commitment to a community.

Chapter 11: Discussion

As discussed in the methods section of this study, the objective of formative research is to improve or develop a design theory or model. There were three guiding questions for formative research: What methods worked well? What methods did not work well? What improvements can be made to the theory? For this study, the guiding questions have been translated into three research questions: In context of how participants experience the AVLM design theory in terms of affective expression, open communication, group cohesion, and immediacy/closeness,

1. What do participants view as positive about those experiences?

2. What do participants view as negative about those experiences?

3. What implications are there for the AVLM design theory through analysis of these experiences?

In this section, the discussion is organized by the four main study constructs of immediacy/closeness, affective expression, open communication, and group cohesion. Within each construct, positive and negative aspects of participant experiences are presented. In addition to the four main study constructs, other principles discovered in the inductive analysis are also reviewed. The implications for the AVLM design theory are discussed and finally the impact of the findings on learning theory in general is discussed.

Immediacy/closeness

Immediacy/closeness is concerned with the relationship between the teacher and the student. Several of the Seven Principles of Good Practice in Undergraduate Education (Chickering and Gamson 1987) are associated with immediacy/closeness. Evidences from the study related to immediacy/closeness are discussed in the following section.

Knowing the instructor. There were mostly positive experiences reported by students and evidence from the videos shared by the instructor indicates that the students were able to get to know the instructor to a certain degree. However, one student reported that the videos were not quite enough for her to feel that she knew the instructor. Knowing the instructor relates to the first of the Seven Principles, student–faculty contact. Because of this finding, implementations of AVLM need to include more videos from instructors that give students more contact with the instructors and a more complete knowledge of their personalities and experiences.

Feeling known by the instructor. This topic is also related to the first of the Seven Principles. Students mostly reported positively that they did feel that the instructor knew them. Students felt that the videos they sent were reflective of themselves and that these videos would help the instructor know them. However, one student felt that the instructor would be able to know her much better if she had been required to share many personal reflections rather than just ideas and content-based answers. This student had previously been in a class where she had been required to write personal reflections and she felt that the instructor in that situation knew her better than in this class.

Receiving individual feedback. The fourth of the Seven Principles emphasizes prompt feedback. AVLM extends that description to specify that feedback should also be learning centered. Amongst the students who commented, there was unanimous agreement that experiences were positive. In all cases the experience was helpful to the students. Some students reported that it helped them understand the meaning of the feedback that they received and how well they were doing in the class. Others reported that in addition to being meaningful, the feedback was motivational and gave them a desire to perform well in the class.

Sensing wellbeing. For this principle, participant experiences were mixed. Some students felt a connection to the instructor that gave them a sense of wellbeing and security. However others reported feeling disconnected from the instructor and had no sense of wellbeing in that respect. Some students admitted that to some degree they were part of the reason for feeling disconnected as they did not really want to form a connection with the instructor and were focused on completing tasks as quickly as possible. Nevertheless, implementations of AVLM should provide more opportunities for the instructor to show care and build connections with students to minimize the situations where students do not have a sense of wellbeing. Some of these problems may be resolved with the increased communications from the instructor, but also this topic relates to the discussion about learning theory in general that is later in this section.

Seeking support. Another principle related to student–faculty contact is concerned with how students seek support. Some students did feel comfortable enough to seek support from the instructor, but most of the students who were interviewed did not want to seek support or did not feel comfortable asking for support. One student felt that she would be bothering the instructor if she asked for assistance. One student who also did not feel comfortable requesting help suggested that the instructor should clearly state when she would be available to help students. The instructor stated that she wanted to help and recognized that some students did not feel comfortable asking.

Feeling comfortable seeking support is an important principle of an online learning environment where students do not have access to on-campus support from instructors or from peers. Further implementations of AVLM need to make sure that video-mails and other electronic messages from the instructor at the beginning of a semester clearly convey the willingness of the instructor to help and also how and when students should seek support.

Affective Expression

In context of the Seven Principles, affective expression relates to two different principles. It relates to principle three, encouraging active learning, in that students express themselves and openly discuss topics and how they relate to them. It also relates to principle seven, respecting diverse talents and ways of learning. Affective expression within AVLM relates to principle seven because it provides an opportunity for students to express themselves verbally as well as in writing. Evidences from this study related to affective expression are summarized below.

Sharing information and emotions. Evidence from the videos that students created clearly showed that information and emotions were expressed and shared via asynchronous video. In the measure that students expressed emotion, it was captured in the videos. All students who commented on this principle felt that they were able to express themselves, and all appreciated the opportunity to express themselves verbally and not just in writing. The instructor also felt that she was able to express herself in the videos. The ability to express emotion and feeling using asynchronous video is a successful element of the AVLM design theory.

Receiving information and emotions. Students clearly had a positive experience expressing themselves using asynchronous video. In comparison, the experience of receiving those expressions and emotions was slightly less positive. Almost all students did feel that they were able to detect and interpret the expressions and emotions of the instructor and other students, but one student did not agree. This student felt that the other students that she had observed were simply getting the task done and not expressing genuine interest. In this case, the student felt that she had not observed genuine emotion and self expression. Although the experience of this student was different from the other students who commented, it is not completely negative. In effect, if students do not express any emotion, other students will not

observe it. When students did express themselves, other students were able to observe and interpret that expression. To address this issue, further implementations of AVLM need to provide assignments that are better designed to illicit genuine expressions from the students.

Feeling comfortable communicating. Videos created by the students include personal information about themselves. Most students who were interviewed felt that they had seen and heard things in videos that helped them know the other students. They felt that they were able to detect their personality, and many would share personal summaries, and from this they felt like they got to know about each other to a certain degree.

One student said that she no level of comfort with the other students through seeing their videos. She expressed that this was mostly because she was ignoring the other students as she felt that only the instructor would watch the videos. In summary, it seems clear that asynchronous video does have the capacity to allow the sharing of information to help build a certain degree of knowledge about others. In this instance, there were probably insufficient opportunities for students to share information with one another and further implementations of AVLM need to provide better opportunities.

Open Communication

All of the following constructs of open communication are related to the third of the Seven Principles. This principle emphasizes cooperation among students. The evidences related to open communication that are considered to be the most impactful in this study are now summarized.

Giving and receiving support and encouragement. In the class being studied, there were very few instructionally planned opportunities for students to give or receive support, and this was a weakness of the implementation of AVLM. However, some students did feel that they

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received support through watching the videos that other students produced in response to their ideas. Most students did not watch these videos as it was not a requirement, but a few did out of curiosity. These students expressed that they appreciated hearing what other students had to say about their ideas. In those videos, students would almost always state the thing they liked about what the previous student had said, and then they would go on to develop those ideas before presenting their own ideas.

It was a requirement for students to comment on the ideas of other students, and some students expressed that this felt like obligatory support that was not genuine. It seems that it would be better to allow students more opportunities to give non-obligatory feedback as well as still making sure there were some requirements to respond to each other.

Recognizing others contributions. The two assignments in the class where students presented and then discussed ideas were poorly designed in respect to the acknowledgement of contributions. Students were required to watch videos created by other students and make comments on their ideas before then presenting their own ideas. Evidence from the actual videos showed that every idea presented by a student was recognized and positively acknowledged by other students. However, students were not required to watch the response videos posted by other students and therefore did not see the recognition and acknowledgement that they were being given.

A few students watched the response videos out of curiosity and did express that they felt that their contributions had been recognized. In effect, the asynchronous video did show an effective capacity for the acknowledgement and recognition of contributions, but the design of instructional activities did not effectively make use of this capacity. In future implementations of

AVLM, students should sometimes be required and perhaps at other times be encouraged to both provide recognition through video and also watch the recognitions that are given.

Knowing classmates. Research has shown that student learning is enhanced when students feel they are part of a learning community (Shaprio and Levine, 1999). Some students felt that they knew each other quite well through the video-mails that were sent and received during the semester. A few students expressed that they knew each other better than they would have without the video element of the class. However, most of the students who commented on this subject did not feel that they knew the other students. According to their comments this was mostly due to the format and structure of the class that unknowingly by design created a strong connection between the students and the instructor and diminished the connection between students.

The first assignment in the class required students to watch an introduction video posted by the instructor, and then to create a video of themselves introducing themselves to the instructor. The instructor then responded to each of the students individually. Throughout the semester the instructor sent individual feedback videos to the students. With this design, the students felt that their relationship was only with the instructor and not with other students. The AVLM design theory states the importance of the student to student relationship but this implementation of AVLM was not structured in a way that allowed for any meaningful student–student connections.

Group Cohesion

Group cohesion is also a construct that relates to the second of the Seven Principles. Specifically, group cohesion is concerned with the learning that takes place when students

cooperate with each other. Evidences from the study, as discussed below, show some positive and some negative results of this implementation of the AVLM.

Learning from others' viewpoints. A positive aspect of the class in this study is how students learned from each other. The student discussion activities were designed so that every student was able to express their own ideas, and so that every student was able to listen to at least two ideas presented by other students. Evidence from the videos produced by students showed that they articulated and developed the ideas presented by other students. All students who commented on this topic felt that they did learn from each other. These students also expressed that this was an effective way to gain ideas and perspectives from their peers.

Integrating knowledge from others. How well students integrate the ideas of their peers is difficult to ascertain as it will be in the future that they will actually consider implementing ideas in their classrooms. However, in interviews a few students did express specific ways they were considering adopting the ideas they had heard from other students. Therefore at least in theory, the way that students discussed ideas with each other through video-mail seems to be conducive to the possibility of knowledge integration and practical application of peer learning.

Feeling a commitment to community. There was no real opportunity for students to form a community in the class due to the same weaknesses that were discussed in the previous topics. Hence students did not express any commitment to student groups. Some students did express some commitment to a community of students that they already knew in other classes, but otherwise, students expressed that they simply fulfilled requirements for group assignments without any sense of commitment to a community.

Other Principles

In the inductive analysis process in this study, issues that do not explicitly fit in the four main study constructs were discovered. Other issues that are directly relevant to the development of the AVLM design theory are discussed below.

Enthusiasm for discussion and participation. Evidence from the videos created by students and from their comments during interviews suggested that they often showed enthusiasm in their presentations. Students expressed that they enjoyed being able to express themselves verbally. Students felt that they were better at expressing themselves verbally than in writing. Many times student video presentations were longer than they were required to be. This showed that in many cases students were not concerned with just meeting a requirement but were willing to present their ideas. Many videos showed that students enthusiastically shared their ideas and answers to assignment questions. These results relate to the third of the Seven Principles, active learning.

Instructor knowledge of students. This topic and the following two are related to the fourth of the Seven Principles which encourages high quality instructor feedback. A natural consequence of the AVLM design theory is that the instructor sees individual video-mails from every student many times in a semester. The instructor of the class in this study expressed that because she saw the students in their video-essays, she was more able to know them and their level of progression than she was with the students in her face-to-face class.

Labissiere and Reynolds (2004) suggested that knowing students can help better address student needs and the instructor confirmed this when she expressed that this enhanced knowledge allowed her to be more accurate in her feedback to the students. This ability to more accurately assess students and to give them better feedback would appear to be a great strength

of the AVLM that seems to exceed the normal limitations of a traditional face-to-face classroom setting.

Instructor responsiveness. Students expressed that they received rapid feedback, and compared it favorably with the feedback they received in their face-to-face classes. Students appreciated receiving the timely responses. Rapid feedback allows students to move forward and is motivational. This is certainly a principle of AVLM that should remain a high priority.

Individual feedback. Implementing AVLM leads to students receiving detailed feedback for assignments. In face-to-face classes students are typically used to less detailed responses and mostly just grades. In interviews students expressed that they enjoyed receiving more detailed information than they normally received. A fundamental principle of AVLM is that feedback is learning centered, and the detailed feedback in the class being studied met this objective to the satisfaction of the students. In addition, students expressed that the responses helped them understand why they received their grades. As stated by Hounsell (2003, p. 67) students learn faster, and much more effectively, when they have a clear sense of how well they are doing and what they might need to do in order to improve.

Summarizing. The instructor of the class had some flexibility in the implementation of AVLM, which is designed not to be completely proscriptive. The instructor added some other elements to the class. One of these can be described as summarizing. The instructor sent individual feedback video-responses to every student for almost every assignment. In the process, she felt that there was a need for a summary of the assignments to wrap up that part of the class and to create closure. The instructor felt that this was a naturally occurring event in her face-to-face classes and that it was needful in the online class. The principle of summarizing certain parts of a course should be added to the AVLM model to help to implement the fifth of

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the Seven Principles, emphasizing time on task. Summarizing helps students focus on a deliberate beginning and end of each topic or section in a class creating an expectation of working to the class schedule.

Progress reports. One development that merits discussion only materialized due to a schedule miscalculation. At close to midway through the semester, the instructor realized that there was a week where no assignment was due. At that point, the instructor decided to send each student a progress report in video-mail format. In this report, she told the students how she thought they were doing in the class and gave a summary of her feedback on work they had done and her perspective on what they were learning.

In many classes students do not receive this type of formative feedback, and students expressed appreciation for knowing how well they were doing and what was expected. Schunk & Swartz (1993) showed that students who received progress reports were the most successful. Following the experience in this study, it is now a recommendation that AVLM should include the principle of at least one and perhaps even two individualized formative progress reports in video-mail format. This development should help to better apply the sixth principle, the communication of high expectations.

Peer review. During interviews, students made some suggestions for how to improve the class. One thing that was suggested was having peer review assignments. In the class, students did comment on the ideas of others, but they were not asked to critique work by other students. Peer review is certainly one method that would help to achieve more student interaction and collaborative learning. Dominick, Reilly & McGourty (1997) found that both students who give feedback and student who receive feedback from their peers improved their performance. Due to this potential benefit, AVLM should be modified to include peer review as a core principle. This

will help to better implement the principle of cooperation among students (the second of the Seven Principles).

Collaboration. Students also expressed a desire to have collaborative production projects in the class. While students were required to build on each others' ideas in the class being studied, they were not required to jointly produce anything. AVLM should not prescribe the type of projects that students should perform as that depends somewhat on the content area, but where possible, creative production projects should be considered as an option. In an asynchronous environment, collaborative production projects are more complicated, but they are possible (Bennett, 2004). As students have expressed a desire to be involved in such projects, creative production projects should become a recommended implementation strategy within the AVLM model. This type of collaborative project would also help to implement cooperation among students and active learning that are respectively the second and third of the Seven Principles.

Webcam use. The central principle of AVLM is that instructors and students see and hear each other in an asynchronous environment. The technologies involved for this to take place are webcams and digital cameras/camcorders. In the class being studied, students were required to use a webcam, and most either owned one already or purchased one. Most students expressed some initial anxiety at the idea of using a webcam, but became more comfortable with practice. Only a few students had previous experience using a webcam, but all students were able to use the technology and overcome the problems that they encountered. Webcams now come as default in many laptops and it is predicted that there will be increased familiarity with video technology and these advances will assist students who enroll in classes that implement AVLM.

Implications for the AVLM design theory

Many of the principles of the AVLM design theory were well implemented and showed positive results showing that those principles should remain unchanged. Other principles were not correctly implemented and the absence of those principles resulted in deficiencies in the overall class experience. The next sections describe changes to AVLM that reflect the findings of the study.

Improvements to existing AVLM principles. As presented previously in the discussion section, there are ways to improve the implementation principles that are already part of the model:

1. Include more videos from the instructor that give students a more complete knowledge of their personality and experiences.

2. Send messages from the instructor at the beginning of a semester that clearly convey the willingness of the instructor to help and also how and when students should seek support.

3. Provide more opportunities for the instructor to show care and build connections with students.

4. Provide assignments that are designed to illicit genuine expressions from the students.

5. Provide better opportunities for students to share information with one another.

6. Provide students more opportunities to give feedback (obligatory and optional).

7. Provide more opportunities for students to provide recognition through video and also watch the recognitions that are given.

New AVLM principles. Following a detailed study and analysis of the participants in the study, several principles were discovered that will be incorporated into the AVLM design theory.

As previously discussed, the following are elements that will be added to the AVLM design theory:

1. The principle of summarizing assignments or certain parts of a course will be added.

2. The principle of scheduled formative progress reports in video-mail format will be included.

3. The principle of peer review will be added as a core principle.

Technology. In addition to the principles that are to be added or updated, it was also discovered in this study that the technology used to implement the AVLM design theory in an actual class needs to be correctly structured to facilitate the operation of the principles in the model. Reif (2006) stated that implementing technology in education requires a correct understanding of educational design and the cognitive principles involved in learning.

The results of this study extend this principle and state that technology must be designed to correctly reflect all elements of an instructional design model. In other terms, it is difficult to achieve the objectives of the model if the technology is not conducive to the principles of the model. The CTLVideoBlog or other technologies that will be developed for the implementation of AVLM should to be designed based upon the core principles of the model.

Impact of the Findings on Learning Theory

The theoretical framework that forms the basis of this study is the Seven Principles for Good Practice in Undergraduate Education described by Chickering and Gamson (1987) in conjunction with the Community of Inquiry Framework (Garrison & Archer 1999, p. 91) and the theory of Immediacy (Mebrabrian, 1969, p. 213). In the constructs found in these theories, many of the principles are highly dependent on relationships. To illustrate a few examples from the Seven Principles, instructor to student contact is concerned with the relationship between

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instructor and student, cooperation among students is inherently relational, and feedback feeds relationships.

In effect many of the principles behind educational learning theories are based on, or impact, or are affected by relationships between people. Immediacy is one theoretical framework mentioned above that does explicitly deal with the relationship between instructor and students. However, most of the learning theories mentioned do not explicitly mention the importance of relationships. In most learning theories, the principles are stated in independent mechanical terms and not in human relationship terms.

Findings of this study highlighted the importance of relationships in almost all aspects of the overall student learning experience. More importantly, the evidence emphasized the importance of the style and personality of the instructor and the style and personality of the individual students in the forming of relationships both between the instructor and students and between student peers.

The unique style and personality of the instructor when added to the class design gives birth to a completely unique educational environment. This unique educational environment when mixed with the unique style and personality of each unique student and the unique student body as a whole gives birth to a unique set of relationships between instructor and students and between the students.

Relationships between participants impact the overall student learning experience and the educational environment is impacted by the personality of the instructor in addition to the style and personality of the students to some degree. This was also suggested by Murray, Rushton and Paunones (1990) who stated that instructors tend to be differentially suited to different types of courses and the compatibility of courses is determined in part by personality characteristics.

If personality characteristics help determine the compatibility of courses, then there are two major elements related to learning theory that are impacted by the findings of this study. The first is that the nature of relationships needs to be more explicitly accounted for in the principles and constructs of learning theories. The second and perhaps the most contentious is that the style and personality of the instructor and students must be addressed or any respective theory will be incomplete by definition. The variability of the style and personality of unique students is obviously difficult to account for, but it is a conclusion of this study that more effort should be made to address it. There is at least some element of control or in other terms deliberate design that can address the issue of style and personality.

The AVLM design theory for example is in a large part based upon the principle that the existence of a high level of immediacy/closeness between the instructor and students leads to the existence of a more motivational environment. With this in mind, should an instructor who does not obviously and naturally display the characteristics of immediacy/closeness or who does not give feedback leading student motivation be the instructor of a class that implements AVLM? The pilot studies reported by Griffiths and Graham (2010) and the results of this study show that the natural style of the instructor is conveyed to the students by the medium of asynchronous video. Therefore the style and personality of the instructor is of key importance of a successful implementation of the AVLM design theory.

Another element that is not explicitly studied in this research but that needs to be recognized is participant agency or choice. Ultimately, participants have the capacity to choose how they act or react to learning environments and to the establishment of relationships. Participants in any learning environment come with a unique set of motivations and personal experiences and they make their own choices of how to act and react to events and situations that

arise. Therefore it is recognized that further research into the importance of personalities and relationships should include the principle of participant agency.

The final point of discussion in this study is that the AVLM design theory should explicitly address the issue of the style and personality of the instructor. It is not the contention of this study that there is one style or one personality type that is appropriate for an instructor in an AVLM. However, it is the contention of this study that the style and personality of the instructor should be explicitly taken account of, addressed, and deliberately planned for in any educational situation where the Asynchronous Video Learning Model is implemented.

Revised Version of the Asynchronous Video Learning Model

A key product of this study is an updated version of AVLM based on changes resulting from the findings. Table 15 shows the final summarized version of the AVLM that is resulting from this study. In the updated model, changes or additions are shown in italics. Some of the main operational principle descriptions have been revised, and some other descriptions of unchanged principles have been reworded. Many changes have been made to the model as a result of this study. It is anticipated that further studies will result in further changes and refinements.

The resulting model is presented as a potentially viable model for designing distance learning environments that use asynchronous video as a central communications method. However, as previously mentioned in this study, the model is not designed to be completely proscriptive. The AVLM model was designed to be flexible enough to be implemented as a layer on top of an existing course design. The principles in the model shown in Table 15 should be considered as adaptable so that the model can be flexibly compatible with many course structures and pedagogies.

Table 15

Updated Summary of the Asynchronous Video Learning Model

Principle	Rationale	Application
Establish high expectations & positive relationship reflective of unique instructor style	Students get to know the instructor, their objectives and expectations for students. Students know that a real person exists who will act as mentor. Instructor gets to know the students as individuals. Students know that the instructor listens & recognizes them as individuals. Students see instructor as a mentor & understand that the learning experience is more than just the content.	Instructor introduces themselves to students. *Instructor shares personal information & expresses desire to support students & explains how and when support is available.* Students introduce themselves to the instructor & instructor responds to each student. Instructor presents weekly message of encouragement.
Students express themselves in visual-oral format as well as written	Students are more likely to critically reflect on the assignment as they are required to visually and orally present responses. *Students are motivated when they are able to genuinely express themselves.* Visual-oral presentations added to written assignments and student hands on projects give a good variety to student activities.	Students respond to some assignments with video-mails. Some assignments may be just video-mail, other assignments may have other products and the video-mail is an explanation or analysis of product. *Some video assignments allow students to genuinely express their own points of view and feelings.*
Rapid, individualized, learning centered feedback	Instructors get realistic view of student knowledge through video-mail assignments than is typically achieved with written assignments. Instructor gives rapid & relevant video-mail feedback to increase student learning & address any student misconceptions or errors. Students improve & grow with rapid, relevant, & clear feedback. *Students learn from peer feedback and encouragement.*	Instructor views each student assignment & responds individually to most student assignments. Instructor responds to student assignments with a video-mail within 24 hours. Instructor gives feedback designed to increase learning & encourage students. *Students encouraged to give and also to watch voluntary peer feedback.*
Students understand progress & are motivated to stay on track	Students see the instructor regularly, strengthening the instructor–student relationship. Students are reminded and motivated to fulfill assignments and to stay on track. *Students are well informed of their progress and status in the class. Students receive closure on assignments or segments allowing for neat progression.*	Instructor presents weekly general announcements & current issues via video-mail. *Instructor provides individualized formative progress report at least once. Instructor summarizes/concludes assignments or sections of class with video-mail to all students.*
Peer supportive collaborative learning environment	*Students know each other and feel that they are part of a learning community and that their involvement in the discussion is valued. Students support each other in the collaborative learning process.* Instructor guides the learning experience & injects instruction where appropriate.	Students introduce themselves to peers in video-mail. Students respond to group assignments with video-mails and respond to each other. *Students have opportunities to share personal information. Students review the work of peers in some assignments.* Instructor guides learning experience with instruction where needed in video-mail.

Conclusion

The several pilot studies followed by this more in depth study have all resulted in the creation and development of the Asynchronous Video Learning Model (AVLM). Weaknesses in the practical implementation of the model and also additional principles needed in the model have been discovered. Consequently, many changes have been made to the model following the findings of this study. In addition, findings of this study have yielded a view of learning theory that includes greater emphasis on the style of the instructor and on the human relationships that are developed as part of an educational experience.

AVLM should be considered ready for more substantial application in the design of online education solutions. However it is recognized that further experiences of designers and instructors will yield continued improvements and greater understanding of the underlying principles. It should also be understood that AVLM is designed to be a principle based model of design rather than a model that prescribes all elements of practical implementation. It should not be complicated to take an existing course structure with the accompanying materials and assignments and overlay AVLM. By changing some assignments to become video-mail presentations and discussion, and by adding the communication and feedback process described in the model, AVLM can provide for an enhanced and more individualized student experience.

The ultimate goal of the model is to allow for strong mentoring relationships where students and instructors know and empathize with each other in an asynchronous distance education world where those relationships are normally difficult to achieve due to the lack of real life contact. The resulting version of AVLM that is the main product of this study is better prepared to fulfill the original objectives described by Griffiths and Graham (2009) to bridge the gap between the extremes of distance and face-to-face learning environments.

Future Directions

The author of the study will continue to research the usefulness of the AVLM where cases of the use of the model are possible to observe. AVLM will continue to be modified and improved as the experiences of participants using the model are more fully observed and understood.

Additionally, the author will continue to pursue the theoretical and practical implications of the outcomes of the study. One outcome of particular continued interest is the issue of technology and its relationship to the implementation of learning methods. Another outcome that is of particular interest is the importance of relationships in the learning process and how the personality of participants impacts the forming of relationships and the nature of relationships in connection to the agency of participants.

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Appendix A – Student Interview Questions

General Questions
1. What are some things you liked about the course?
2. What are some things you disliked about the course?
3. What were your initial reactions when you first heart/learned about this (asynchronous video) format for the class?
4. If you could participate in another class with the same format (use of video) would you take it, or would you participate in a section with a traditional class format? Why?
5. If you had been the professor for this class, what would you have done differently? Why?

affective expression
6. Do you feel you were able to express/sense emotion (excitement, passion, humor, frustration)?
7. Did you find information about others in their video-clips that helped you feel comfortable conversing with them?

open communication
8. How did you give/receive support (compliments, feedback, etc.) using video-clips?
9. Do you feel you got to know your classmates better through video-clips?

group cohesion
10. Compare group work through video to group work in a face-to-face class.
11. Was your group effective through video?
12. Was it better/worse than a face-to-face class.
13. How did the video-clips affect your personal commitment to your group?

Immediacy/Closeness
14. How connected did you feel to your professor(s) through this class format? How did the video sharing contribute to that connectedness?
15. How connected did you feel to your classmates through this class format? How did the video sharing contribute to that connectedness?
16. Think about a face-to-face class that you have had where you feel like you had a good relationship with your professor. What similarities are there between the professor-student relationship in your face-to-face class and the relationship in this class?
17. How much and in what way(s) did the instructor-to-student relationship affect your desire to perform well in this class?

Appendix B – Instructor Interview Questions

General Questions
1. What are some things you liked about the course?
2. What are some things you disliked about the course?
3. If you could teach another class with the same format (use of video) would you chose to or not? Why?
4. What would you change if you were to teach the same class again? Why?
5. What is the impact of AVLM on you as an instructor? What consequences are there?

affective expression
6. Do you feel you were able to express/sense emotion (excitement, passion, humor, frustration)?
7. Did you find information about others in their video-clips that helped you feel comfortable conversing with them?

open communication
8. How did you give/receive support (compliments, feedback, etc.) using video-clips?
9. Do you feel you got to know your students better through video-clips?

Immediacy/Closeness
10. How connected did you feel to your students through this class format? How did the video sharing contribute to that connectedness?
11. How well did you know your students?
12. Would it be possible to know them in the same way in a face-to-face class? Explain.
13. Think about a face-to-face class that you have had where you feel like you had a good relationship with your students. What similarities are there between the professor-student relationship in your face-to-face class and the relationship in this class?