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ABSTRACT

This report presents the results of the evaluation of the Governor's Pilot Distance Learning Project conducted during the spring of 1997 in four rural Wyoming high schools that served as pilot sites for the use of compressed video technology. Such technology provides coursework via two-way interactive video and is used in several states as a way of expanding the diversity and equity of curriculum offerings available to geographically disperse populations of students. Sections of the report provide: (1) description of the evaluation methodology employed; (2) an overview of the pilot project in terms of enrollment by course and school, academic performance of student participants, dropout rates, and how the technology was used; (3) a detailed description of what supports will be needed to promote effective statewide implementation of distance learning; (4) participants' perceptions and attitudes about the appropriateness of the technology for different content areas and audiences, perceived benefits, uses of the technology, and the technology itself; (5) state-level issues associated with planning, policies, and governance structures for administering distance learning programs; and (6) a summary of project findings, along with specific recommendations for the next steps in implementing distance learning in Wyoming. Compressed video equipment was used to offer courses in math, business, history, English, social problems, and career development to 85 high school students, of whom 70 completed the semester. Results show that students, staff, and administrators experienced positive effects from the project, and that certain supports will be necessary for large-scale implementation: technology; physical space; staffing; professional development, time, and compensation; scheduling; marketing and lead times; and contingency plans. While participants saw potential for the future use of compressed video technology, they felt it was most appropriate for highly motivated, advanced students. An appendix includes sample logs, survey instruments, report sheets, and site visit methodology. (SAS)

The Governor's Pilot Distance Learning Project: The Experiences of Four Wyoming Schools

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Executive Summary

This report provides an overview of the Governor's Pilot Distance Learning Project conducted during the Spring of 1997 in four rural Wyoming schools. The four participating sites used compressed video technology as a means of providing additional coursework to their students. An extensive literature review, as well as quantitative and qualitative data collected during the pilot, are combined in this report to present an evaluation of the experiences of the pilot project participants.

The findings of this study indicate several results. First, people (students, staff, and administrators) experienced positive effects as a result of involvement in this study. They overwhelmingly expressed that they "liked" the technology. Second, if this technology is to be implemented on a large-scale basis for long-term use, several supports will be necessary. These supports include: technology, physical space, staffing, professional development, time and compensation, scheduling, marketing and lead times, and contingency plans. Third, participants saw potential for the future use of this technology. However, they felt this technology was most appropriate for highly motivated, advanced students. Finally, based upon the above findings, a number of considerations and recommendations for policy makers are outlined. This evaluation will prove useful as Wyoming stakeholders consider taking the next step of implementing this technology on a statewide basis.

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I. Project Overview

This report provides an overview of the Governor's Pilot Distance Learning Project. Conducted during Spring of 1997, this project consisted of four rural Wyoming schools who served as pilot sites for the use of compressed video technology. Such technology provides coursework via two-way interactive video and is currently being used in several states as a way of expanding the diversity and equity of curriculum offerings available to geographically disperse populations of students.

This pilot project was undertaken to provide policymakers with information on: 1) the feasibility of providing coursework and other services via compressed video technology; 2) the receptiveness of people to both taking and providing coursework via compressed video; 3) the potential impacts of taking courses via compressed video on student learning; and 4) the supports, procedures, and policies necessary to promote effective implementation of distance learning technology on a statewide basis.

In order to collect data pertinent to these issues, an evaluation of the Governor's Pilot Distance Learning Project was conducted jointly between the Wyoming Department of Education (WDE) and the Center for School Improvement (CSI), a nonprofit educational research agency subsidized by the Region V Board of Cooperative Educational Services (BOCES). This evaluation consisted of collecting multiple sources of data at the student, staff, and program levels. Both quantitative and qualitative research techniques were employed in order to provide a comprehensive picture of the educational effectiveness and social impact of distance learning technology, as well as to obtain information on what specifically does and does not work in terms of implementing such technology. Finally, an exhaustive literature review was conducted and information compiled regarding the experiences of others with distance learning, including examples of policies and mechanisms used elsewhere to promote efficient utilization of distance learning technology on a large-scale basis.

This report presents the results of the evaluation of the Governor's Pilot Distance Learning Project. As such, it is organized into several sections. First, a detailed description of the methodology employed by this study is provided. Second, an overview of the pilot project is provided in terms of who participated and how the technology was used. Third, based upon evaluation results, a detailed description is provided of what will be necessary to promote effective implementation of distance learning technology on a statewide basis. Fourth, the perceptions and attitudes of program participants are described in detail, especially as they pertain to such areas as the appropriateness of this technology for different content areas and audiences, perceived benefits and uses of the technology, and attitudes towards the technology itself. Next, state level issues associated with planning, policies and governance structures for administering distance learning programs are described. Finally, a summary of the findings from this pilot project is provided along with a list of specific recommendations regarding the next steps for implementing distance learning in Wyoming.

The information provided by this report will prove invaluable to state policymakers as they proceed in their efforts to determine both the future and form of distance learning technology in Wyoming schools.

II. Methodology

Determination of the data needed for this evaluation was based upon the research questions of interest as well as areas deemed important by the research literature on distance learning. Methods employed to collect these data were determined based upon what was needed and consisted of both quantitative and qualitative techniques employed at the student, staff, and program levels. More specifically, ***student level data*** consisted of:

- pre & post assessment data of students enrolled in the compressed video math course;
- data on student enrollment and characteristics of students who took distance learning courses as well as those who dropped out;
- attendance & drop-out statistics;
- student surveys distributed at the end of the semester; and
- face-to-face interviews with students who participated the *entire semester* as well as those who *dropped out* of a compressed video class sometime over the course of the semester. These were performed during site visits made to each of the four participating schools.

Staff level data included:

- face-to-face interviews with persons involved with the pilot distance learning project;
- quantitative surveys distributed to staff at the end of the semester; and
- both written and oral comments submitted to CSI by program participants.

Program level data were collected from:

- logs maintained over the course of the entire semester. Separate logs were filled out at each site in order to systematically document: a) the frequency, format, content and audience of any professional development received that was related to the distance learning program; b) *any use of the compressed video technology* (either instructional or noninstructional); c) expenditures associated with the pilot distance learning project; d) technical difficulties experienced over the course of the semester; and e) the presence of any support persons (other than students) in the classroom during compressed video classes. The instructor of the compressed video math class also kept a record of

the type and frequency of interactions with students, assignment distribution and turn-around time of tests and assignments.

- site visits made to each participating school. Researchers performed these site visits based upon a uniform protocol that specified the types of information to be collected. Specifically, persons who conducted the site visits conducted face to face interviews with staff, students, and drop-outs and also observed a compressed video class using observational checklists.
- Finally, in addition to this information being collected at each school, TCI Cablevision (who supplied most of the equipment used) was asked to document and submit information on time contributed, resources and supplies used, and costs incurred as part of the distance learning project.

Development of the instruments used in this evaluation was based upon an extensive review of other related evaluations and research studies. Draft instruments were circulated among WDE personnel and other researchers to review for clarity of question wording and content. However, extensive piloting of *all* instruments used in this evaluation was not possible prior to circulation due to the short timeline involved in this pilot project *(See Appendix A for a copy of all instruments used in this evaluation).*

Data was collected over the entire course of the semester and was submitted for data analyses to CSI at the conclusion of the pilot project. Logs were systematically analyzed and tallied, statistical analyses run on quantitative survey results obtained from both staff and students, and tapes from the site visit interviews were transcribed and a content analyses performed on these transcripts. Finally, extensive follow-ups and phonecalls were performed to obtain missing data and/or to obtain clarification on any ambiguities in the data submitted.

Triangulation of these multiple sources of data provides us with a comprehensive and richly textured description of what occurred during the Governor's Pilot Distance Learning Project. It must be noted, however, that this study is primarily *descriptive in nature*. Time, practical considerations, and the small number of students involved in this pilot project precluded this evaluation from employing a more rigorous experimental design utilizing randomly assigned control groups that could be used to compare distance learning with traditional classroom instruction.

In addition, the ***exceptional level of cooperation and willingness exhibited by project participants*** in providing researchers with requested information must be acknowledged. We are particularly grateful for the insight and candidness with which participants expressed their views. The text of this report contains many of these comments although, due to issues of confidentiality, comments are not linked in any way to specific individuals.

III. Characteristics of the Pilot Project

The compressed video equipment was used to offer the following courses: MathTopics, Introduction to Business, History, English, Social Problems, and Career Development. Additionally, an Internet class was offered to staff at the pilot sites. At the beginning of the semester, combined enrollment across all of these classes (not including the Internet class) totaled 85 students. By the end of the semester, 18% of these students had dropped out of distance learning courses, leaving student enrollment at 70 students. The table below summarizes enrollment information across the four participating schools.

Table 1: Enrollment by course and by school*

	Math Topics		English		Social Problems		History		Career Devt.		Intro to Business	
	Beg	End	Beg	End	Beg	End	Beg	End	Beg	End	Beg	End
Hulett	6	2	20	20	1	1	2	1	14	14	1	1
Guernsey	3	3	-	-	-	-	-	-	1	1	2	2
Kaycee	4	4	4	4	3	2	-	-	12	6	-	-
LSRV	5	2	-	-	2	2	5	5	-	-	-	-
TOTAL	18	11	24	24	6	5	7	6	27	21	3	3

** Information in this table is based upon enrollment logs filled out by participating sites.*

Examination of enrollment data shows that one site, Guernsey, had fewer student participants than the other sites. One factor that may have contributed to this is that Guernsey did not have the compressed video equipment located on site.

When considering those students who dropped out during the semester, there is some variation across the different courses. Specifically, while no students dropped out of English and Business, one student dropped out of History and Social Problems, six out of Career Development and seven out of Math. At one site, the fact that the Careers class was held during lunch period combined with the fact that the compressed video did not come up for three consecutive weeks contributed to this dropout rate.

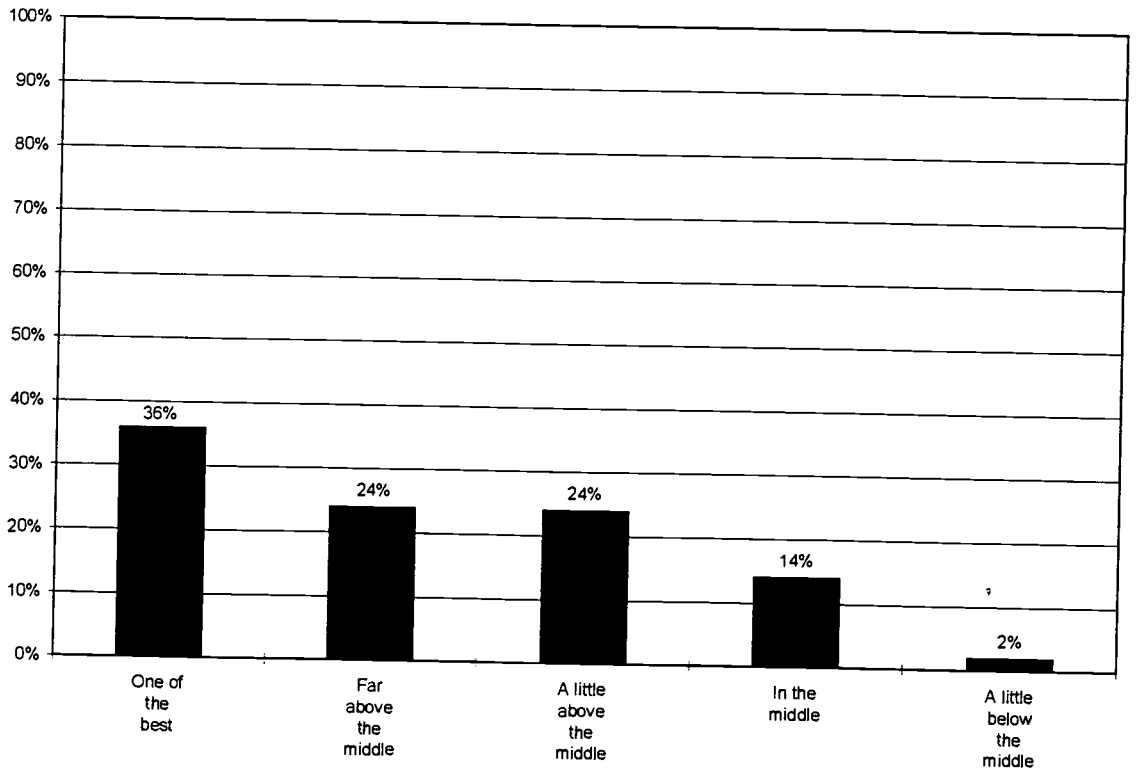
Notably, the History, Social Problems, and English classes were college level courses available to high school students (in the case of the History and Social Problems courses, the enrollment also included adults). As such, enrollment in these classes was restricted to "higher performing students." For example, one school required that students who wanted to participate in the History class either had to have a 3.25 GPA or be recommended by a school faculty member. The Math course, however, did not have any such restrictions and was used by many students who needed one last credit of Math coursework for graduation. As this course was ungraded some students may have, mistakenly, viewed this as an "easy" course. In addition, the Math course was conducted in a less traditional "lab" format where students worked interactively on computers and the instructor looked in electronically to both view and demonstrate computer screen. Both of these reasons, combined with the high absentee rate (15%) and the fact that

students may have fallen behind and found difficult to catch up, may have contributed to the relatively high number of drop-outs in the Math class.

At the end of the semester, surveys were completed by 42 students and 9 staff members who participated in the pilot project (See Appendix A for a copy of the surveys). Approximately 69% of the students responding to these surveys were females and 31% were males. Twenty of these students were 12th graders, nine were 11th graders, six 10th graders, and seven 9th graders.

The figure below shows the results from a question on the student survey which asked respondents to describe the type of student they are.

Figure 1: Type of Student



By the end of the Spring semester, the vast majority (84%) of students participating in the distance learning program were above average performers academically. In addition, results of the enrollment data presented in Table 2 below suggest that, although there were more average and below average students involved with distance learning courses at the beginning of the semester, they dropped out at a disproportionately high rate from the compressed video courses than did the higher achieving students.

Table 2: Dropout Rates Overall and by Course
Number of Dropouts by Class Rank

	Overall	Math	English	Social Problems	History	Career Devt.	Intro to Business
Top 25%	2 (5%)	1	-	-	-	1	-
Middle 50%	7 (19%)	2	-	-	1	4	-
Bottom 25%	6 (50%)	4	-	1	-	1	-
Total	15	7	-	1	1	6	-

- Class ranking appears to be related to student dropout rates. While only 5% of the student participants who were rated in the top 25% of their class dropped the course he/she was enrolled in, 50% of participants rated in the bottom 25% of their class dropped out of a distance learning course.
- Among students beginning the Math class, the average GPA was 2.6. At the end of the semester, the average GPA for students still in the class was 3.2. Part of this difference could be accounted to those students who dropped out. Of those students who dropped out, four (57%) were ranked in the bottom 25% of their class at school, an additional two students (29%) were ranked in the "middle 50%." Only one student who dropped the course (14%) was in the top 10% of his/her class.

IV. Supports Necessary for Effective Utilization of Distance Learning Technology

Results of this pilot project provide much insight into what will be necessary to implement distance learning technology on a long-term, large-scale basis. Preliminary evaluation results suggest that the success or failure of distance learning in Wyoming may very well hinge upon: a) technical considerations in terms of quality, reliability, facilities and support; b) adequate staffing in terms of administrative support, the existence of site facilitators and coordinating personnel, and people who are capable of troubleshooting with technology; c) the amount of attention paid to training staff on an ongoing basis in the use of compressed video technology; d) provision of time and incentives (such as increased pay and load reduction) to staff involved in distance learning activities; e) coordination of scheduling activities; and f) provision of adequate notification and lead time so that potential students can be notified and enrolled in available courses.

Technical Considerations

Issues associated with technology can be categorized into two main subheadings hereby referred to as ***functional technology*** and ***convergence of technology***. Functional technology refers to the quality, reliability and consistency of compressed video transmissions. Convergence of technology refers to how different technologies need to work together in order to maximize the potential of compressed video technology.

Functional Technology

In terms of *functional technology*, it is unsurprising that a big issue in the minds of everyone is that the compressed video technology must work. Participants experienced difficulties with the compressed video technology with some regularity. Two thirds of staff cited that technology breaking on a regular basis was an obstacle to implementation.

Table 3 below shows the proportion of students and staff who agreed or strongly agreed with statements on the surveys regarding the quality of transmission.

Table 3: Quality of the Compressed Video

Statement	% who Agree or Strongly Agree	
	Students	Staff
The sound quality on the DL system was adequate.	63%	43%
The TV screen was large enough to clearly see the information presented by the teacher.	90%	89%

Difficulties came in the forms of sound problems, specifically, not being able to hear or hearing a distracting echo. To a lesser extent, video problems, and/or transmission difficulties were also experienced.

> **"In a distance learning classroom, this means that the technology to get you physically connected must be in place and it must work all of the time. What do you do when you can't connect physically with students in one of the sites? Do you abandon them and go on with those students who are there? Do you stop and use other technologies (i.e., speaker phones) to at least connect using audio? Do you stop and help the facilitator at the site who can't come up completely, to get them up? But if you do, you have students who are sitting around bored and wasting time. These were issues that teachers faced every day."** -- participating staff member

Reliable and quality transmission is essential to the success of a distance learning course. To illustrate this point, one of the pilot sites conducted a career guidance course via the compressed video during the spring semester which did not receive transmission for three consecutive class periods. This coupled with the fact that students were missing their lunch to be there resulted in every student at that particular site dropping this course. Participants at one of the receiving sites for History had three different disruptions including one class that was not scheduled. Students had to wait approximately forty-five minutes for the course to be brought up. On another occasion a power blackout prevented the students at that location from getting transmission. It was suggested that if this system was installed on a permanent basis, a battery backup should be considered for instances when the power does go out. On another occasion this particular site lost connection to the remote site which took about 10 minutes to repair.

One staff member estimated the frequency of technical problems occurring at once a week. Usually, the problems "were never severe enough that they had to call someone from

TCI." Nevertheless, it was estimated that it often took 20 to 25 minutes of class time to fix these minor problems.

Although technical problems seemed to occur with some regularity, most staff members felt that this was inherent in any *pilot* (especially given the rapidity with which this one was undertaken), and that, over time, the frequency with which these types of problems occurred would get less and less.

> **" I debated about making a comment concerning the technology used for the project. We seemed to be plagued with computer freezes, satellite audio being down, software troubles, and a variety of other issues. Although we addressed many over a period of time, other problems eluded a solution. However, I do not in any way want to discourage the use of this technology. I think that the troubleshooting is really just a matter of time. "** – participating staff member

The prevalently held view was that, if the equipment was there on a long-term basis, the bugs would get worked out. Indeed, as the pilot project progressed the frequency with which these difficulties occurred did decrease steadily. For example, one staff member said that he/she called TCI on a weekly basis at the beginning of the semester and that, by the end of the semester, it was maybe once a month. Although, at first, the Guernsey site experienced many technical difficulties and was often down, once a technician from TCI reconfigured the system, Guernsey participants reported that they did not have the technical problems they had initially. Others stated that, once the system was truly up and running (by the end of January), it worked well.

What can be done to increase the quality and dependability of compressed video transmissions? The length of this pilot project was too short to provide definitive long-term data on the regularity (or lack thereof) with which these types of technical difficulties can be expected to occur. At this time it is unclear whether many of these difficulties were just associated with the technology being "fresh", recently installed and new to program participants or whether such difficulties are (currently) inherent to this type of technology.

Another way to approach functional technology is to anticipate that, inevitably, technical difficulties will occasionally arise. Is it practical to expect technology to always work? Most people do not find that this is the case. Thus, one might ask "what can be done to minimize the adverse impact or amount of "down time" associated with problems when they do occur?"

Many participants stated that they expected difficulties -- it just would have been a lot easier and could have been handled more efficiently if they had a separate "technology specialist" on hand. In terms of the availability of outside support, TCI staff was available to deal with substantial glitches and would usually return calls within the hour. However, ongoing minor technical difficulties such as sound irregularities almost always had to be addressed at the moment by persons on site. *All staff* felt that a technical person who was capable of troubleshooting needed to be on site. They felt strongly that if such a person was present and well-trained, relatively minor problems would not wind up taking

up major chunks of time. In several instances the only "technical specialist" was the teacher of the compressed video classes themselves. Combining the instructional and technical functions into the teacher detracted from the teacher being able to focus on instruction and often resulted in lost class time for all students.

Finally, it is important to note that, when the technology was functioning properly, people were quite impressed with it. Several students commented that they thought the technology was "neat." All staff members seemed to like the compressed video.

> **"the compressed video and audio is a lot better than I thought it would be. I think the company that put this together did a really nice job and I really hope that they continue the program."** – participating staff member

Convergence of Technology

Oftentimes, the potential of one technology is enhanced by the existence of other technologies. *Convergence of Technology* refers to the fact that several different technologies need to be present in order to maximize the benefits that can be derived from a distance learning program.

Elaborating on this point, distance learning does not consist of a single medium. Rather, supporting technologies such as e-mail, internet access, file transfer capabilities, fax machines, and classroom phone lines need to be combined to provide for a system of "synchronized communication."

As it was with this pilot project, many of the pilot sites were rather marginally connected. Some schools had only one Internet access point (combined with a two hour per day time limit), others had modems which precluded them from sending files over a certain size, some problems regarding incompatibility of platforms and/or programs between the different sites were experienced, and sometimes a speaker phone used via a second phoneline had to be used for audio connection. This situation needs to be addressed and "full connectivity" achieved in order to maximize the capability of this technology in terms of providing opportunities and contributing to student and staff learning.

> **"a) Everyone must have at least one good connection to the Internet, in the room where the class is held; b) everyone must be using the same platform; c) everyone needs to use the same mailer (e.g., Eudora Mail, etc.) and the same FTP software; d) everyone needs to have a "black box" which converts computer video to NTSC so that the computer images in distance sites can be seen without filming a computer monitor; e) if various software packages are used as teaching tools, every site must be running the same version; and f) every site must have a person on site who is familiar with all software being used and is willing and able to assist others in learning that software."** – participating staff member

Elaborating on the potential for supportive technologies, other distance learning programs (outside of Wyoming) regularly put up chat rooms over the Internet for their classes and many establish toll free phone line(s) with designated call-in hours when phones will be manned by an instructor and/or teaching assistant(s).

Do all such things need to be physically present within the classroom? The answer that most would give to this is --- it would be nice. Definitely there needs to be a separate phone in the room so that a speaker phone could be used if there were some audio difficulties. Additionally, on a few occasions, personal cellular phones were used to establish a connection with those who would have answers to technological difficulties. If not physically present within the room, having a fax nearby is desirable. Most teachers felt that Internet access during class helped things go more smoothly in terms of being able to transfer files and communicate with relatively little lag time. One of the sites had to physically move equipment between buildings for the distance learning classes. An estimate was given that 2 ½ hours per session were needed to set up and again tear down the equipment.

The importance of having convergent technology is difficult to overestimate, still, it is likely that such issues may take on decreasing importance as time goes on and more schools expand their access to such things as the Internet, e-mail, etc.

Physical Space

In deciding where to put the compressed video technology, pilot sites made do with what they had in terms of space. One site held classes at a location outside of the school, another put the students in the library. Although these arrangements sufficed over the short term, any long term program would probably require a more suitable location.

For example, although they did a good job with minimizing the existence of any outside disturbances for the distance learning class held in the library – doing so prevented them from fully utilizing the library for other activities. At the other school, there were some logistics associated with providing transportation to and from the off campus site. Undoubtedly, it would probably have been more convenient to have the classes on site.

The research literature suggests that the following space requirements are necessary for a distance learning classroom. Each school should have a place available for use that is free from interruption and has adequate lighting and electrical service for the necessary equipment. The room should not be isolated from other parts of the school. In some cases it is suggested that some unobtrusive means of monitoring the students be provided (such as windows in the room). The place should have lighting of high enough intensity that the television camera can pick up adequate images and attention should be paid to the acoustics of the room and to the type, number and placement of microphones. Sufficient electrical outlets are needed for equipment items generally associated with distance learning including televisions, VCR's, computers, printers, facsimiles machines, etc. In addition to the electrical wiring, video and telecommunication connection needs should be considered as might room security (Hartz, 1983). This point is reinforced by one of the pilot sites which had to rewire a room, at a cost of $1200, in their district in order to support the distance learning technology.

Staffing

The four sites battled staffing issues throughout the pilot program. These pilot sites did not have extra staff to assist with distance learning, as their staff had a full plate even before participating in this project. Any successes stemming from this pilot project can largely be attributed to the enthusiasm, dedication and extraordinary commitment of participating staff members to "make this thing work" – regardless of whether it entailed taking on more work without any form of compensation.

> **" We were delighted to do it as a pilot, but I'm not sure that we would be delighted to do it again without some serious on-site physical help with a number of the routine duties and details that go along with it."** – participating staff member

In order to promote this on a long term basis, all participants said they would need some staff to deal with such things as the day to day supervision of kids, scheduling, dissemination of course information to potential students, coordination, assignment distribution, making sure the equipment was up and running, and resolving any technical problems. The literature on distance learning corresponds with the views expressed by the participants in this study, specifically, research has shown that, "regardless of the quality of the curriculum or the capabilities of the technology, if the human element is lacking, distance learning programs will become crippled" (Lever-Duffy, 1992).

In particular, program participants identified a number of staffing issues that need to be addressed if distance learning technology is to be implemented on a large-scale or long-term basis. Such issues include having a site facilitator present and a technical support person on-site; provision of help sources to students for content; clear articulation of roles and responsibilities of program participants; administrative functions that need to be performed, and the suggestion that a central state level contact person be specified in the future.

Someone needs to be present at each receiving site while the classes are going on. The teacher of the distance learning class needs to be able to focus on instruction – not discipline. Thus, a site facilitator (be it an aide, volunteer, or another teacher) usually needs to be present with the students at the remote sites in order to operate equipment, take attendance, maintain order, distribute materials, handle daily operations and administrative tasks and otherwise provide assistance to the teacher.

> **"The facilitators would let me know if there was a problem surfacing and I relied on them because they knew their students. The remote teacher doesn't really know them like you do. We really approached things as a team."** – participating staff member

Does a site facilitator need to be present in the classroom with students at all times or will periodic checking suffice? The data displayed in Table 4 below suggest that it is probably advisable that a staff member be present most of the time.

Table 4: Supervision Needs of Distance Learning Courses

Statement	% who Agree or Strongly Agree	
	Students	Staff
DL support personnel should remain in the classroom throughout the class period.	33%	67%
Student discipline was *not* a serious problem in the DL class.	56%	75%
Students were very attentive during the DL class.	46%	56%
Students put a lot of energy into what they did for the DL class.	39%	44%

- The majority of staff felt that someone should be present throughout the class period.
- Although fewer students felt that a staff member should be present during classes, they were also more likely to feel that there were problems associated with discipline and attentiveness. Indeed, responses to an open-ended survey question on what they did *not* like about the compressed video showed that the most frequently cited response (tied with technology problems) was that too many kids were allowed to disrupt the classes.

What are the roles and responsibilities of the site facilitator? Peters-Gant (1996) outlined the following checklist of responsibilities for site facilitators: troubleshoot equipment, prepare room arrangements, handle administrative duties, check attendance, distribute course materials, proctor tests, maintain records, transmit student assignments, stock teaching supplies, record scheduling concerns, handle site coordination, update SOP (standing operating procedure), post telephone & fax numbers, other site unique requirements, ensure equipment operability, check room acoustics, and check lighting.

Regardless, of how the role of site facilitator is structured, it is probably advisable to have job descriptions that clearly define the roles and responsibilities of any staff member involved with the distance learning program.

> **"Staff definitely needs to know what they are supposed to be doing. There are a lot of times when the line between facilitator and teacher was pretty narrow and there were days when I felt like maybe I should be doing a little something extra for these kids, but I struggled with it because I wasn't sure whether that was my job or the teachers job. It would be helpful to have an outline that specifically defines the facilitator's role so that both the facilitator and the instructor know whom will be responsible for what."** – participating staff member

Does the degree of involvement by the site facilitator need to vary depending on the type of course being taught or who is being taught? It may be desirable for site facilitators to take a more active role with students who are less motivated and/or require more face-to-face interaction than others.

Who should be present in the classroom? Should the person in the classroom be certified or receive special training? Both the literature and results of this pilot study do not provide definitive answers to this question. Certification and training requirements vary across projects with most finding it impractical to have a teacher certified in the content area present at the receiving sites during the classes.

Should a site facilitator provide additional subject help to students? Depending on the knowledge and sophistication of the site facilitator, problems could be caused for the teacher if the students receives incorrect information. Certainly, it is necessary that content area specialists be readily accessible to address student questions (be this the site facilitator or whomever), indeed, only slightly more than half (54%) of the students who responded to the end of the semester survey agreed or strongly agreed that they were provided with assistance and tutoring when they needed it. Access to e-mail and phone lines will also be a great asset in this regards. It is important to note, however, that there is some benefit to students having someone on-site that they can contact for assistance when they have problems with their class. One instructor said that, although all students knew they could contact him/her via e-mail or phone when they needed additional assistance, they never did. One possible reason for this can be seen in a comment made by a student participant during an interview.

> **"A teacher is sometimes better because if you have a problem after school you can go right to that teacher and talk right with the teacher one on one. On this you have to call them and tax them . . . I had some questions on my term paper and I just e-mailed him and then he e-mailed me back and answered all my questions, but sometimes that is kind of hard because you know, it's not that personal one on one connection."** - participating student

Elsewhere, programs have set up toll free numbers along with specified times during which somebody would be available to answer questions. Depending on the size of the distance learning class, some programs arrange for outside tutors (e.g., graduate students, etc.) to help monitor phone line(s). One program we reviewed regularly assigns thirty kids per graduate student. This graduate student or tutor acts as the main contact to students throughout the semester and answers questions, grades assignments, and provides feedback. In this type of scenario, the role of the teacher is restricted to presenting, explaining, and providing for lively interaction over the compressed video medium.

Next, teachers cannot be expected to be responsible for both teaching and the technical side of things. Separate technology persons need to be present at the broadcast site (e.g., to make sure the cameras are pointed in the right direction, etc.) as well as at the receiving sites in order to ensure that the technology is working correctly.

> **"There are so many technological things that can and do wrong. I would say that if there is one aspect that is of central importance, it is that the teacher in the classroom cannot be the teacher AND the tech person. The teacher teaches. He or she expects that the technology which physically connects teacher and students**

will be there and it won't interfere with the lesson. For if it does, the day is lost! Every distance lab has to have a tech person on staff who gets the class up, who assures that it will stay up, who brings it down, and who assists with other "offline" technological needs ." – participating staff member

Someone at all sites (and ideally more than one person at each site) must understand how the different technologies converge, how to run them, and how to use them so that they enhance one another. For example, they must know how to create, send and receive files using electronic means. During this pilot project, problems were experienced with file transfer in that files over a certain size could not be sent or files seemed to get irreparably altered during the file transfer process. Reasons for this include the inexperience of project personnel with the file transfer process, incompatibility of file transfer programs (e.g., different ones or different versions), and differences in modem speed. Regardless of the reasons, there tends to be an inverse relationship between the amount of time an instructor has to devote to technical and/or logistical issues and the amount of actual instructional time received by students.

Besides having staff to supervise, help students with subject matter, and assist with the technical side of things, there are administrative functions that need to be performed. These are often more time intensive at the beginning of the semester and include such things as: establishing schedules, deciding what classes can be offered, disseminating course information among students and getting them enrolled, making sure there is a room available, arranging for supervision and making sure that the appropriate paperwork for the class is completed. These tasks were mostly done by administrators during this pilot project and, in terms of time required, ranged from several hours a day (at the beginning of the semester) to approximately three hours per day or less by the end of the semester.

Finally, consideration should be given to designating a central contact person at the state level for distance learning. Some staff mentioned that having a central resource person out there in the state to contact would be nice. As one person said "it just seemed like there wasn't a real central place to go to if you had problems." Such a *state specialist* should be knowledgeable about specific technologies, their costs, and their potential for local use. Other duties of the state specialist could include: 1) knowing the names and addresses of successful ongoing projects within the state that might be contacted or visited; 2) keeping listings of national and regional level programmers and their course listings; 3) maintaining a record of people in the state trained in delivery over this medium and the content areas they can teach; and 4) assisting with scheduling of classes across sites.

Both the literature and the results of this pilot study do not provide definitive answers as to what the composition of an ideal "distance learning staff" might look like. Results do suggest that, at bare minimum, a site facilitator and technology person needs to be present on-site, responsibilities of involved individuals must be clearly articulated, and someone should be readily accessible to students to assist with content questions. With this in mind, it is likely that schools can and will often experiment with different arrangements (such as

the actual physical presence of a facilitator in the classroom) and self-regulate based upon what they see happening in the distance learning classroom.

Professional Development

Results of this pilot study suggest that training needs to be continuous, coordinated, conducted over an extended period of time, and be revised periodically. A major area of training identified by program participants was that they needed to be more prepared to deal with technical problems when and if they occurred. In particular, it seems advisable that future training(s) incorporate the use of real-time practical demonstrations conducted during actual troubleshooting scenarios.

In terms of professional development received during the pilot project, quite a bit of training was received, especially in light of the short timeline involved and the fact that this was a cooperative endeavor between several agencies (e.g., TCI, Hughes, V-tel). Specifically, one site received four trainings, all of which focused on equipment function. The other sites received 1-2 trainings usually attended by a couple of designated individuals from each school site. However, more systematic, coordinated, and hands-on training would have to occur on a regular basis for distance learning to work on a long-term basis. A well-designed training program for both professionals and students should reduce the threat and obtrusiveness of this technology.

The other major training need identified by program participants is that the teachers of distance learning courses need to receive some professional development to assist them in adapting their teaching strategies to this medium. Six of the nine staff members specifically mentioned that teachers would need assistance with adapting their teaching styles.

> **"I like to walk, talk and present. Because of the constraints of the equipment, it confined me to this little area and I couldn't get up and do that -- so I could no longer teach in the style that I was accustomed to."** – participating staff member

> **"I think that teachers have to work on being really dynamic and have a different approach towards homework and assignments. We found that sometimes it was difficult to see overheads so that we started faxing things over ahead of time so that they could read along."** – participating staff member

In particular, the research literature suggests that teachers of distance learning courses need to use more visual props as well as concentrate more on *forced interaction* and how they can creatively draw kids into discussions. One participant in the pilot project commented that some instructors were more adept at "passing the baton" around to participating sites than others -- which helped keep interaction going among the sites.

The literature clearly states that a very important aspect of distance learning is careful teacher selection and training. Important characteristics of the distance learning teacher include voice quality, self-confidence, stage presence, a flair for dramatics and spontaneous creativity. Indeed, six of the nine staff participating in this pilot project indicated that they felt that it was *very important* for a distance learning teacher to have "show business" or communication skills. In addition, it is important to get someone who is both comfortable with the technology and one that can plan teaching with a view to the advantages and limitations of this technology. Some of the participating staff members felt that there might be teachers who are hesitant to teach via this sort of medium or in this type of format. It is certain that inadequate training and/or untimely involvement of such teachers and aides can hurt a program, especially one that is still in the developmental stages.

Peters-Gant (1996) recommends the following checklist for professional development related to distance learning: "adult learning theory; interactive, presentation and television skills; verbal/nonverbal communication; questioning strategies; feedback techniques; pacing instruction techniques; group dynamics; equipment operations; preparation of students materials; television graphic/visuals design; hands-on practice sessions; and contingency plans."

Finally, a policy level question related to professional development associated with distance learning would concern any requirements regarding the certifiability and training of people who are involved with the distance learning courses. Some discussion regarding the desirability and/or content of such criteria may need to take place.

Notably, distance learning programs located elsewhere often distribute a 'core' of training materials that are both self-instructional and serve an ongoing resource when formal trainers are not on site.

Time & Compensation

Detailed data was collected on the actual time devoted to distance learning activities by the various participants as well as cost data associated with time, materials and other distance learning related expenses. A detailed itemization of such cost data will be provided in a cost/benefit analyses section that will be issued as a supplement to this report. However, the following summarizes some general observations regarding the time and compensation needs of distance learning participants:

- Both the experiences of project participants and the research literature suggest that there is more teacher preparation time involved for teaching a distance learning class as compared to preparing for a traditional classroom format.
- Always allot more time for troubleshooting than you would ever conceive of doing --- one minor glitch can take an hour to fix.

- Especially in terms of administrative tasks, the distance learning pilot project took up a much greater proportion of people's time in the beginning of the semester than at the end of the semester.
- Faculty incentives, such as increased pay and load reduction, should be offered for those involved in the distance learning program.

Elaborating on some of these, a main reason why more time is required by teachers to prepare for distance learning courses is that, generally, distance learners are provided with more supplementary materials than are students in traditional classrooms. Such materials need to be prepared, duplicated and sent to the receiving sites. In addition, participants indicated that televised instruction required more planning and consideration. It is more difficult for a teacher to improvise over this medium than in a face-to-face type of setting. One teacher in this pilot project estimated that it took from 16 to 20 hours to prepare for a single course held three times a week.

The pilot project was definitely more time intensive on everyone at the beginning of the semester than at the end of the semester. Especially for those performing administrative functions, the time intensiveness of the program dropped off dramatically as the semester progressed. One administrator estimated that his/her time dropped from 2-3 hours every day spent on distance learning to maybe 45 minutes three times per week.

> **"At first it was really quite time intensive in terms of the whole business of finding a place to set it up, coordinating the set-up process, talking to the people about how it all might work and then the whole business of getting the word out to the community and students about what we might be able to offer, and then sitting down and scheduling those in so that it would work into everybody's schedule."** – participating staff member

The novelty and time frame associated with this pilot project makes it difficult to definitively state the time that will be required by staff involved in distance learning activities. It is likely that what was experienced during the pilot in terms of time requirements would be an overestimation of the time required if this technology were to be implemented on a long-term basis. These people pioneered the use of this technology —there is no doubt that pioneering is a much harder task than mimicking. Suffice it to say that the learning curve definitely flattens out. One participant said that the first time they had to set it up, it took them over an hour to get everything plugged in and set up -- by the end of the semester they could do it in 8 minutes.

> **"I would say that if all of the technology had been in place, test driven and all of the bugs were out of it, I would say that at the end of the first week all of the classes would have been cooking and on task and everybody would have been organized. But because of the time constraint and, I mean, we brought the technology up as we started the class. And any time there was a technological problem, the class had to adjust to it and so it took longer for us to get used to it. In an ideal world of course that would all be solved and**

you would walk in and teach. It was a PILOT. " – participating staff member

It appears that, once the initial bugs are worked out, a relatively stable number of hours can be allotted to this project. Additional longitudinal data is needed to give us a more accurate estimate of time requirements. The research literature does, however, provide some estimates regarding time that will be incorporated into the cost/benefit supplement to this report. Certainly, time will be one of the most important resources needed by people involved with distance learning.

Finally, it is absolutely essential that faculty and staff receive some form of compensation for the work they devote to distance learning activities. Records kept during the semester on the amount of time devoted to the pilot project indicate that staff dedicated hundreds of hours of their time *voluntarily*. Individual staff members took on a substantial workload associated with this pilot project including tasks related to: taking attendance, monitoring students, distributing handouts, collecting homework, proctoring tests, operating equipment, serving as a liaison between various parties, supplementing instruction, teaching, helping students with content-related questions, and other administrative duties. An analyses was performed to look at how many different distance learning related tasks individual staff members took on during the pilot project: one staff member performed three of the above listed tasks, one performed six of them, two did seven, four staff members did eight different tasks, and one did ten! In addition, eight of the nine staff participants indicated that such a workload was an added responsibility to their existing workload without any form of additional compensation.

"It should be noted somewhere that a lot of people worked many, many hours beyond the call of duty and obligation. These people wanted the project to succeed. They wanted to show that maybe we can do something with this. However, the state can't expect people to do that on a large scale without just compensation. I mean, after awhile everyone gets tired." – participating staff member

"However, if the state is examining this as a way to do away with teachers and/or increase our work load even more without compensation, then they are dumb beyond belief." – participating staff member

The goodwill and enthusiasm of program participants was wonderful – but there is a limit to how far goodwill will take you. Regardless of how enthusiastic and committed the individual, such enthusiasm wears thin for the overburdened and undercompensated. Distance learning requires time and work -- both of which needs to be allotted and fairly compensated if such a program is to be implemented on a long term basis.

Scheduling Issues

Unsurprisingly, scheduling classes across the different school sites was problematic for the pilot project. Indeed, distance learning programs everywhere must address issues of scheduling on an ongoing basis. Due to incompatibility across school schedules, most of the distance learning classes the pilot project were offered during "off-hours." Classes were held either before or after school or during lunch hour and, in some instances, would overlap with other classes a student was taking.

> **"I think the most difficulty we had in terms of gaining student support in the program was scheduling issues. We had four schools connected, all of which run on a different time schedule throughout the day and students found it very difficult to manage a distance class that either started before school or was in the evening. There was one class before school, one in the evening, one over their lunch hour, and three that overlapped with existing classes. It was very difficult for students to manage their other classes while they had this distance class overlapping into one or two others on some days and I know that just frightened a number of students away. They would have to come to school early in the morning and they might go to practice, then they have a full slate of classes and then by lunchtime they are hungry and weren't religious about sitting in another room for the career class that was held over lunch. At first, they may have thought it was kinda neat , but then they said "I can't do this, this is too much for me I've got to eat first. It boiled down to a very fundamental need – hunger."** – participating staff member

Classes that are scheduled during "free time" create additional stress and demands on both students and staff. For example, several students dropped out of the career development class due to the combination of it being held over their lunch hour and the fact that one site did not get transmission three consecutive class periods. Unsurprisingly, every student at this particular site eventually dropped the course.

In addition, there were unclear arrangements as to how students could make up classes that were missed – or be provided with the time to catch up when they already had a full schedule. During the site visits, a few students who had dropped out of a distance learning course during the semester were interviewed. Two of the students interviewed said that they dropped out because of scheduling conflicts, and two more said that it was because they had missed classes and fallen behind.

How do you make up classes that are missed? If recorded, the sound quality is sometimes compromised and distracting in that sometimes voices would not go with the video, etc. In addition, on one occasion all the students showed up for a class that was not on the video schedule at the origination site. They finally got it up but it was an approximately 45 minutes after class was scheduled to begin.

In addition, yearly breaks or schedules may be sacrificed because the video schedule does not call for a break at the same time as a school.

> **"Your school has an extended break. Your video schedule does not. Forget that spring break!"** – participating staff member

It is noteworthy that, although scheduling was definitely a concern for everyone involved in the pilot project and was perceived as a barrier to student participation, none seemed to feel that this would present an insurmountable difficulty for a distance learning program in Wyoming. Rather, the view was expressed that school schedules would eventually "come together."

Marketing & Lead Time

Research findings consistently indicate that it is essential to market distance learning (Koontz, 1989). Potential audiences for distance learning courses need to be targeted and sent specific course information. In addition, people at the individual schools need to know the details associated with distance learning classes so that they can readily answer questions regarding student eligibility to take classes and so on. Such information needs to be transmitted to both administrators and potential students in a timely manner so that schools can assist students with class scheduling as well as filling out the appropriate paperwork. Additionally, if students are using these courses for dual credit, more lead time is required to go through procedures required by postsecondary institutions.

Consideration of Contingencies

> **"If you are sick, there is no sub. If you are scheduled to go online and you are sick as a dog, you go online."** - participating staff member

Based upon the experiences of program participants, one can specify a checklist of questions or contingencies that should be considered a priori to the implementation of distance learning, specifically:

- What happens if the compressed video teacher is sick?
- What do you do when some schools are on break and others aren't?
- What do you do when the technology person doesn't show up to bring a site up?
- What do you do when the people are there but the technology doesn't work?
- How do you help students who have missed a class to catch up when they have no time provided in their schedule to do so?
- What do you do when some sites are working but others are not?

These are all things that inevitably came up during the pilot project but for which no prior thought or mechanisms were in place for dealing with them. Participants had to "put out

fires" and "deal with things" constantly – it is only by virtue of the dedication and ingenuity of many of those involved that they were able to work through so much of it themselves. Although it is safe to say that people "learned a lot" and would have much to say to other schools who are contemplating utilizing this technology in the future, one might ask whether it is fair or reasonable to place people in a situation where the learning curve is both high and rather stressful. This pilot project has identified a number of the scenarios which will arise – it would be advisable to develop some standard operating procedures regarding how to handle them when they do come up.

V. Attitudes and Perceptions of Program Participants

Both survey and interview data are triangulated in this section to provide an overview of participant opinions of distance learning in regards to: 1) what it is appropriate for; 2) who it is appropriate for; 3) perceived and desired levels of interaction among students, students and teachers, and between staff at the different sites; and 4) attitudes towards the future of distance learning technology in Wyoming schools.

What Types of Courses are Appropriate for Distance Learning Technology?

Partially due to the short notice and planning which was given prior to installation, schools probably did not have the opportunity to arrange for as many alternative types of uses for the compressed video as they could in the future. Asides from the specific courses offered, the compressed video was used among program participants for discussion pertinent to implementation of the pilot project as well as for a WHSAA coaching clinic.

When asked about what they saw as appropriate uses for the compressed video technology, participants saw great potential in terms of expanding the curriculum offerings available to their students and providing continuing education to school staff and others in the community.

> **"One of the biggest problems in small schools is that we can't offer the curriculum that bigger schools can."** – participating staff member

In particular, one participating staff member stated that they would really like to see this technology offered across the state because small and large schools have things to offer each other.

Although this pilot was conducted in secondary schools, at least one staff member mentioned that it would have been fun to do some cooperative things with different elementary schools, for example supplementing the study of Wyoming by having kids present an oral history of their area.

Also, while staff were very enthusiastic about the potential for enhancing curriculum, many were adamant that distance learning not be used to provide core curriculum or to replace what is currently being provided within schools. People felt that the distance learning technology would be invaluable in terms of providing their students with

opportunities that would otherwise be unavailable to them – but that it should be *used as an enhancement rather than a replacement.*

> **"It is great to add extra things – but I do not want to seem them take away teachers or provide a core curriculum via another site because it (distance learning) definitely has its limitations."** -- participating staff member

> **"I don't think it would be appropriate for core curriculum high school classes, but definitely some extra high school classes that we can't offer here, like German or more detailed history classes, also dual enrollment courses such as College English could be real beneficial to our kids."** -- participating staff member

Staff expressed mixed views as to the appropriateness of this type of technology to teach different *types* of classes. Five of the nine staff members felt that this medium would not be appropriate for more applied lab type classes. In addition, two staff members felt that classes involving lecture only would be boring over the compressed video and that classes with more of an emphasis on discussion would work well.

> **"I think classes with a great deal of discussion and interaction would do well on compressed video. A type of class where people are supposed to just read and do their work is a waste of potential I think. Just looking at a number of classrooms where everybody's got there head down working on a test, all of our tests were scheduled after we went off line so that the time online was used for discussion and review."** – participating staff member

Mixed views were obtained on the appropriateness of this type of technology for foreign language classes. One staff member said that they felt that language classes require so much ongoing, interaction that it would be inefficient to conduct it via this medium. Several others, however, expressly cited foreign language classes as an area in which small schools really needed to expand their curriculum offerings. Notably, it is possible that, if the technology had included some enhanced interactive features (discussed subsequently in this report) that made it easier for students to see one another, this staff member may have had a different opinion regarding the use of compressed video for foreign language classes.

Finally, we had a contingent of people who felt that, with appropriate preparation and planning, this type of technology could be used to teach any type of class:

> **"I think pretty much any class could be piloted if you have the right facilities and the right equipment available."** – participating staff member

The literature on distance learning corresponds most closely to this last point of view. Elsewhere, distance learning technology has been used extensively to provide elementary enrichment, foreign language classes, and applied types of classes involving labs. Although lab classes require that students be provided with lab kits initially, close up video

coverage makes it a fairly easy way to demonstrate activities so that an entire class can see at a given moment.

The Math class conducted during this pilot project was run using more of a lab type of approach. Here, students worked on their assignments while the instructor looked over their shoulders electronically, sometimes showing the different computer screens to others in the class. Although there were some kinks to this, many seem to agree that such things often take some ironing out. Thus, it is not necessarily that this type of thing cannot be done via compressed video, rather many expressed the view that it could be done – albeit, with a little more practice and experimentation.

> **"I don't know that there is any class that I would just blatantly out right say can't be taught. And, on the other hand, I would not say there is any class that just absolutely is Cracker Jack."** – participating staff member

Finally, all staff indicated that they felt that compressed video technology should be used to provide professional development. Of the nine staff members who responded to the quantitative survey, eight indicated that they would actually prefer this type of inservice over traveling to different locations away from their home or school.

Course Provision: The Department of Wyoming!

Decisions regarding the types of courses that will be provided and who would provide these courses are intricately entwined. In a nutshell, distance learning courses can be produced either externally or internally. There are many outside providers that provide different types of courses that individual sites can subscribe to, indeed, some schools in Wyoming are already tapping into these existing resources.

Decisions on how to provide a given course should be made on an individual basis taking into consideration: 1) the availability of qualified instructors to teach the course; 2) the match between the content of existing outside courses and the needs that are to be filled; 3) the quality of the courses being offered (as with everything, the quality of teachers and courses vary even across national providers); and 4) the cost effectiveness (taking into account projected student enrollment) of providing the course internally or externally.

Two program participants referred to an intriguing concept herein referred to as the *Department of Wyoming*. In this type of scenario, Wyoming could have a big Language Department which transcends district boundaries. For example, if one knows of a good German teacher in Greybull (or wherever), students over in Thermopolis could access such expertise. People could go and get the very best – adding breadth and depth to a staff and system. A few participants expressed the opinion that technology could pair or group rural schools and divide up course offerings. One teacher could teach Geometry to students at different sites, while another could teach Algebra. This would take some of the planning time off of individual teachers, thus, teachers would have less courses to plan

for, and so could ultimately do better preparation for those courses they were teaching.

> **"Think of it as a department. Think of us as a big high school with twelve attendance sites and the department became bigger. We can't afford to bring in somebody, now we can do that."** –participating staff member

There are several benefits associated with producing the programming upon demand, within the state. The interaction and resource sharing that this would require could foster collaborative networks among teachers. Such informal peer contact is exactly the type of ongoing, professional development that research suggests is effective. Besides the contacts, there is some excitement and recognition associated with different sites or locations being given the opportunity to design classes themselves rather than relying on outsiders.

> **"We wanted to see whether we could present classes to ourselves in terms of small school to small school and that was the thing that excited us, that we don't have to rely on Oklahoma State or even Cheyenne – the type of thing where Big Brother is teaching. We could do these things ourselves and were anxious to give it a whirl."** – participating staff member

What Types of Students Can Learn Via Distance Learning Technology?

Participating staff felt that, although this technology is great, it is ***not for everybody***. Specifically, people felt that motivated, high-achieving students were the ones who would benefit most from this technology.

> **"(U)nless you are a real motivated student, a lot of these kids aren't going to be able to make it in this format and so, we are kidding ourselves if we are thinking that this system could replace a subject area in our school at some point."** – participating staff member

> **" I can see a district using the compressed video for more advanced students. I have real strong opinions about lower students being in this program. If students are extremely motivated and capable and responsible, it will probably greatly benefit them."** – participating staff member

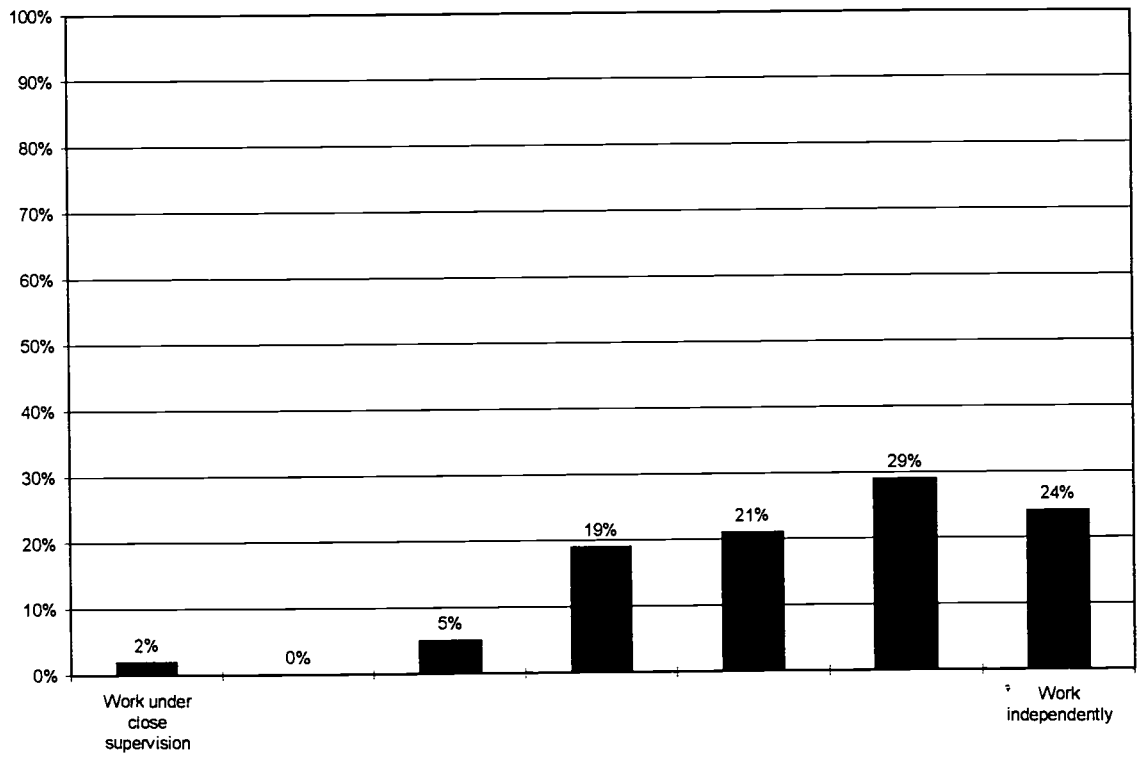
Staff felt that this type of instruction would be most effective with learners who were independent and self-motivated, they felt that learners who need a lot of prodding and supervision would fall behind.

> **"Those students who know that they want to take that class and have the self-discipline to go into the classroom and sit and listen, pay attention and participate will do quite well in it. Those students who need some kind of guidance as they learn, physical presence of a teacher to cause them to behave and do there work will obviously be much less successful because you know, unless the class originates from here, then we don't have that person there all the time, we might have an adult monitor in the room but**

we can't necessarily have someone who is a professional instructor with them all the time so that one gets a little shakier, those who are not highly self motivated don't seem to fare quite as well in the distance situation." -- participating staff member

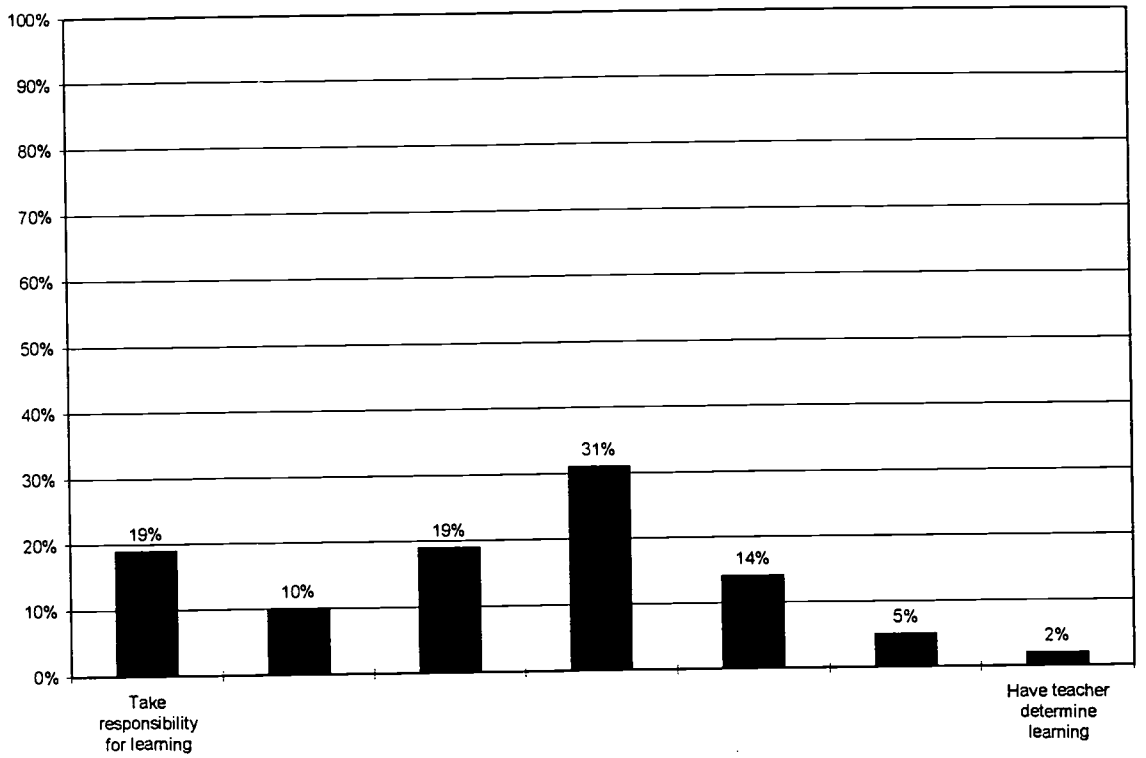
Results from the student survey substantiate the impressions of pilot project participants. Specifically, students were asked to characterize their learning styles, ranking the characteristics listed below on a scale of 1 to 7. The results are presented in Figures 2 and 3 below:

Figure 2: Students' Learning Preferences
Independent vs. Directed Learning



- Undoubtedly, the vast majority of students who were still enrolled in distance learning courses at the end of the semester were self-motivated and enjoyed working independently. Specifically, 53% of the students preferred to work independently (e.g., ranked a 6 or 7) to working under close supervision (2% ranked 1 or 2).

Figure 3: Students' Learning Preferences
Personal Responsibility for Learning



- Students involved in the pilot courses are more likely to prefer to take responsibility for their own learning (29% ranked a 1 or 2) than to have their teacher determine their learning (7% ranked 6 or 7).

Such views regarding the performance and motivational level of students are also corroborated by the research literature. In a study by Hartz (1983), student selection emerged as one of the keys to success or failure of the two-way system as a vehicle for instruction, with mature and highly motivated students being more likely to have success via two-way instruction. Indeed, a couple of staff members mentioned that they thought there should be some sort of selection mechanism for student participation in the distance learning program. Referring back to the dropout patterns described previously in this report, attrition was disproportionately high among students whose class ranking was either average or below average.

In addition, some limited comparisons can be made regarding the amount learned during the semester by the different types of students. To the extent possible, a limited amount of outcome data was obtained in order to see whether students in the distance learning courses actually learned something. Specifically, Pre and Post assessments were administered to students in the Math Topics course. Accompanying these pre and post test results were instructor ratings on the amount of effort individual students put into the course. Overall, across all students who remained in the Math class the average gain was

2.7 points (out of 20 possible points). The average gain for those who worked hard was 4.8 points and those who did not work hard 1.5 points. As noted previously, a limitation of this evaluation is that it is not able to draw conclusions regarding the amount learned in distance learning courses as compared to students in traditional classrooms since time and practical considerations made it impossible to arrange for a comparative control group.

Definitely the students who responded to the surveys that were distributed at the end of the semester were a fairly motivated group of individuals. Among this group, the reason cited most prevalently by students for taking a distance learning course was that they were interested in getting additional credit, both for high school and for college. Only one kid said they took the class because they thought it would "be a good mess around class."

There is consensus that highly motivated, achievement oriented students will learn via two-way instruction. In addition, these students specifically mentioned that they really enjoyed being able to take college courses and being exposed to other students who are attending college. Moreover, experiences with accreditation in Wyoming suggest that, although most districts are very good about providing remediation to students who need it, all too often *enrichment* does not really exist for high-achieving students. Distance learning technology could help provide such enrichment.

Nonetheless, the above discussion brings up questions of equity and accessibility in regards to this technology. If money is to be invested in this technology, can all students benefit from it or will it only benefit the "high-achievers?" Is it appropriate to take steps to ensure that all students use the technology if, due to differences in learning styles, some students do not experience the same types of gains in learning as others?

> **" In terms of students learning, I believe for the unmotivated, the results will be marginal and for the motivated, immeasurable."** -- participating staff member

Is it not appropriate that some forms of instruction may work better for different groups of students? If this mode of instruction does work better for the highly motivated will it allow teachers to spend more focused time with those types of students who need someone who will prod and encourage them? Such questions of access and equity will inevitably need to be addressed by any statewide distance learning program.

Finally, it must be noted that, although the experiences of program participants and the research literature suggest that highly motivated, bright students will benefit from this technology, it is still inconclusive as to whether other types of students *cannot* benefit from it. It is possible that certain "props" may help increase the benefits derived by less motivated students. For example, what will happen if we take these same less motivated students and combine them with a dedicated facilitator who keeps them up to date in terms of completing their assignments and forcing them to work? What if we take a very charismatic teacher with a whole lot of "pizzazz" and throw him or her into the equation?

Or, pair these students up with a personal tutor who knows them personally and cares about them? Additional research is needed to look at whether the existence of different types of supports may increase the effectiveness of distance learning instruction with less motivated, underachieving students.

Interaction & Contact

When asked why they chose to take a distance learning course, the top two responses from students were because they "wanted the coursework" and because they were interested in having the outside interaction with people who were not from their local area. This latter, providing students with an opportunity to meet others and be exposed to some diversity of perspectives and people, is a very significant "intangible" benefit associated with distance learning. Especially in a rural state such as Wyoming, students really seem to yearn for this type of interaction. Retroactively, when asked what they had enjoyed most about the compressed video, the most frequently cited response from students was that they enjoyed meeting and interacting with people from other areas.

> **"I like it, I think its pretty neat. You can see other people ... other people around the state – I kind of liked it.** –participating student

> **"The kids found it fun, some were in the same classes with actual college students that they could work and interact with, so it was kind of fun for them to see someone who was older and who viewed the world a bit differently than they did."** -- participating staff member

> **"It is important for them to see that there is more to the world and that there are more career opportunities than those available around here.** – participating staff member

Unfortunately, although the opportunity for interaction among different people was viewed as a real positive by both students and staff, the technology was not friendly in allowing students at the different sites to see one another.

> **"This took a lot of work (to allow classes to see one another). And, in fact, the technology we used wasn't at all friendly in doing so. What some tried to do was to use one of the cameras to shoot the remote monitor and then send the image to everyone. However, this really wasn't a good way to do it because the image was somewhat distorted. In addition, although this allowed other sites to see the site the teacher selected, it did not allow for one random site to see another random site. Sometimes this would have been nice."** – participating staff member

The technology was more conducive to student/teacher interaction and viewing than for student/student viewing and interaction across sites. Thus, although students seemed to engage in quite a bit of peer tutoring within sites they did not seem to do so as frequently across sites.

Table 5: Frequency of Student Opportunities*

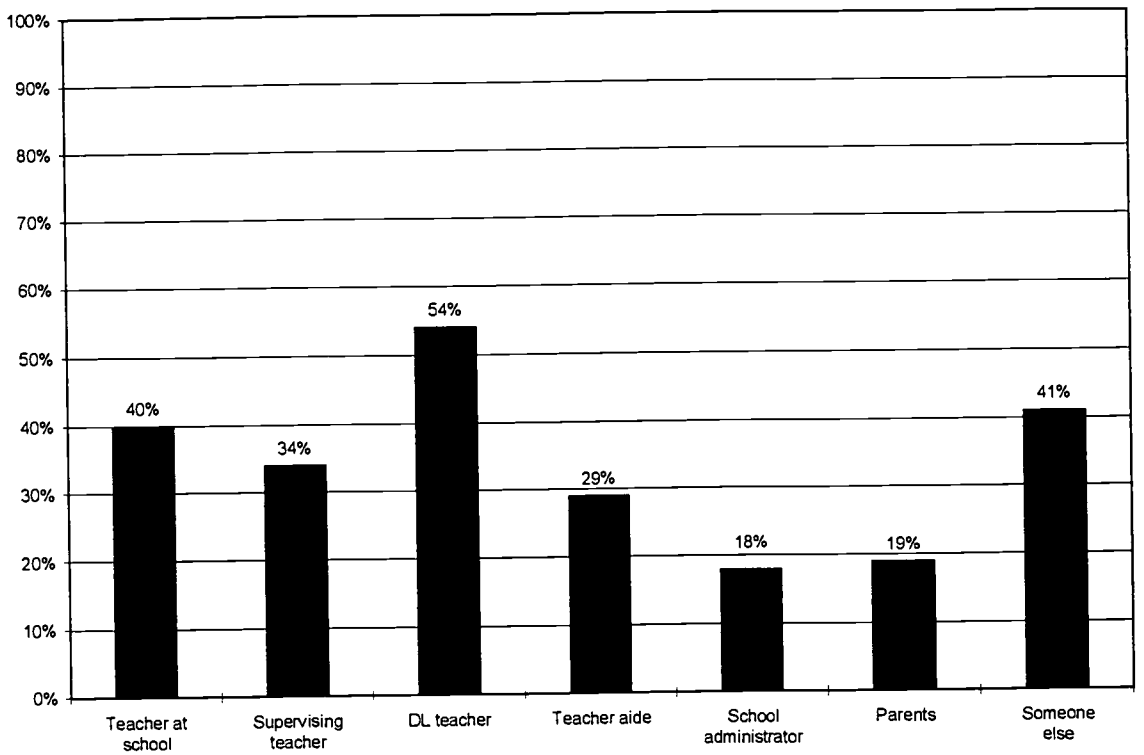
Statement	Weekly	Monthly	Occasionally	Rarely	Never
Students worked together *within the classroom* on activities.	75%	13%	13%	0%	0%
Students engaged in peer tutoring.	63%	0%	25%	0%	13%
Students worked with students *from other schools.*	50%	25%	0%	13%	13%
Students worked with a variety of materials.	56%	22%	22%	0%	0%
Individual students were called on by name to contribute to the class.	100%	0%	0%	0%	0%

** Results are reported based upon the staff survey (N=9).*

Indeed, ¾ of participating staff indicated that they felt that students had more of an opportunity to engage in peer tutoring during distance learning classes than they would in a traditional classroom.

Figure 4 below shows student responses to a survey question which asked who they would go to when they felt "lost" or needed help. Responses reported in this figure are the proportion of students who said they would go to each of the different sources either often or frequently.

Figure 4: Who students go to for help



Of the students who indicated that they went to someone else, the majority stated that they went to other students for help. It is also noteworthy that, in response to the above question 26% of students said they *never* went to a teacher at school if they were lost and 14% said they *never* went to DL teacher if they were lost.

It is unfortunate that the technology did not allow for more interaction across receiving sites. This may be a desirable feature to consider in future decisions regarding technology requirements.

> **"We mostly just saw the teachers, we couldn't see the other sites."** – participating student

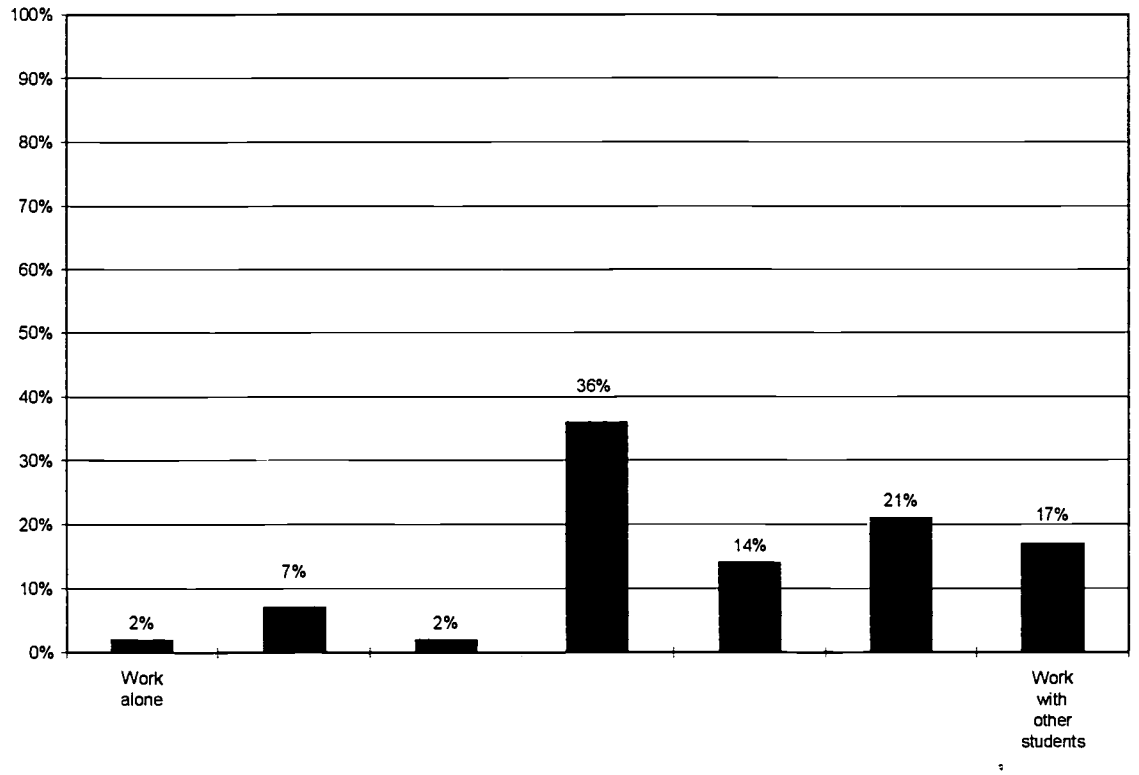
> **"Truthfully, I think a lot of kids signed up initially because they thought they were going to interact with all these other kids and see all these different kids but it was not all it was cracked up to be or what they thought it would be -- at least not in this area."** – participating staff member

Students really enjoyed the opportunities for contact and interaction with other students that were available to them – although they would have liked more. The fact that this technology did not allow for students to view other sites (either simultaneously or randomly) restricted the level of interactivity for both teachers and students. It appears

likely that, to the extent that the technology can be designed to foster such contact between sites, the higher the level of student satisfaction will be.

These points are further illustrated in Figure 5 below. This figure presents student responses to a survey item regarding their preference on a 1 to 7 scale of working alone or working with other students.

Figure 5: Students' Working Preferences



- A pervasive characteristic of participating students was that they liked to work with others. Many of the students who participated in this class replied that they did so because they wanted interaction with others outside of their immediate community.

Similarly, instructors found the technology somewhat limiting in that they could not view the students at all of their receiving sites simultaneously. This made it difficult for them to monitor student interest and gauge understanding.

> **"Although it was a really big classroom it is not actually live exchange because you can only watch one other site. It would be helpful if you are teaching that there are three screens and you can see the three classes. That would be a huge step forward to see all of your students. Any teacher knows that you need to see their eyes when you show them something. How do you know if you are motivating them if you can only see half of the class? Try to put a**

wall in the middle of your class and see how it feels to teach that way. Of course all of this would mean that you would need three transponders – guess what, The price just went up." – participating staff member

The type of delivery as it was set up during the pilot did not allow for as high a level of student interaction as may arguably be desired. However, cost will be a major consideration when deciding upon the characteristics of any distance learning system. To the extent that the system can be set up so that more sites can see one another, the bandwidth will have to be larger, and the price tag will go up.

Two staff members mentioned that it would be nice to arrange it so that teachers and the students at the origination site and the students at the remote sites could meet one another at least once over the course of the semester. For example, teachers could teach using each site as an origin point at least once, be provided with the time to go physically down to each of the receiving sites to meet the students and facilitator(s) personally, or have some type of joint field trip combining students from the various sites. At least one of the classes in this pilot study did have a joint field trip which received favorable reviews. The research literature also suggests that doing such things as having teachers trade locations and/or holding joint parties with remote and home site students together may contribute to building a teacher-student rapport and helps create more of a "classroom" atmosphere (Hartz, 1983).

Finally, a number of questions regarding interaction between students with each other and with their distance learning instructor(s) were included in the survey(s). Results from these question are reported in Table 6 below.

Table 6: Student Contact with DL instructor and Peers*

Statement	% who Agree or Strongly Agree	
	Students	Staff
I can easily contact the DL teacher if I need to.	68%	67%
The DL course allowed for adequate interaction between the students and the **instructor**.	70%	67%
I can easily ask questions of my DL teacher **during** class.	78%	-
The DL course allowed me adequate interaction with **other students.**	73%	-
There was plenty of opportunity to participate in class.	85%	-

** Dashes in the body of the table indicate that this survey question was not included on the staff survey.*

- 85% of students felt that there was plenty of opportunity to participate in class.
- Approximately 1/3 of student respondents to the survey did not feel that they could easily contact their distance learning instructor.

Finally, some mention needs to made of the relationship between levels of interaction and class size. In practice, most compressed video systems are cooperative networks that link together somewhere between two to ten schools. Preliminary results suggest that the number of sites served by an individual teacher should be limited -- to what is as yet unclear:

> **"you have to keep probably no more sites than what we had because if you are going to have the session and interaction, three, four, five sites max, probably four on a course at a time. I don't think having ten sites would work. I participated in a compressed video science class a while back where they had to bring lab stuff and everything. The teacher had to come back around to everyone and it took too long – it was too large a group."** – participating staff member

In sum, to the extent that feasibility and cost permit, a finding of this report is that the effectiveness of the distance learning technology in terms of the amount learned and enjoyment of the recipients corresponds directly to the level of interactivity permitted by the technology. One may advocate the planning of a distance learning system that is completely interactive --- or as close to this as is viable.

Collaboration between Sites

The research literature emphasizes that a high level of cooperation between entities involved with a distance learning program is absolutely essential to the success of such a program. If the results of the pilot distance learning project are any indication of how it will be for the rest of Wyoming, this will be an area of strength that will contribute to effective implementation of distance learning technology on a statewide basis.

> **"I never worked with a harder working group of people. Everyone was dedicated, they wanted to see this work. They were receptive to trying new things, nobody stood in the way or said no we can't do this because... it was always OK let's try it, let's see what happens. No matter who was asking the question, it was always yes. This was fantastic."** -- participating staff member

The high level of cooperation and resourcefulness between the four participating sites was probably one of the most important contributors to making this project a success. Note that "success" here is defined based upon evaluation findings that: 1) many persons (students, staff, and administrators) experienced positive effects as a result of involvement in this program; 2) the learning curve was very high in that participants and policymakers have gained a great deal of insight into what will be necessary to implement this technology on a large-scale basis; and 3) by the end of the pilot project virtually every participant was enthusiastic about the potential for distance learning technology in their schools. It is important to note that the cooperation and collaboration that occurred between the four sites occurred not only between the instructors and site facilitators, but also between the school level administrators at all four sties.

It is desirable that the type of cooperation and teamwork shown among the pilot sites manifests itself on a statewide basis. The fact that Wyoming has a relatively tightly knit educational community, many of whom know one another, should lend itself towards such cooperative efforts.

Attitudes of Participants

Attitudes of participating *staff* members were overwhelmingly favorable. A small number of teachers felt that some teachers might feel threatened by this technology. It is possible that this type of negativity could be alleviated through clarification of what this technology is and is not expected to do. As stated previously, most people feel that this should not be used to deliver core curriculum, rather, it should be used to supplement and enhance the "core." Notably, however, some teachers might be very hesitant to teach via this sort of medium or in this type of format.

Staff were asked to rate, on a scale of 1 to 5 (where 1 represented very well and 5 represented not well at all), how well the distance learning had been received by certain people in their school. The table below presents the percentage of respondents that felt the specific group received the distance learning well (a 1 or a 2 rating).

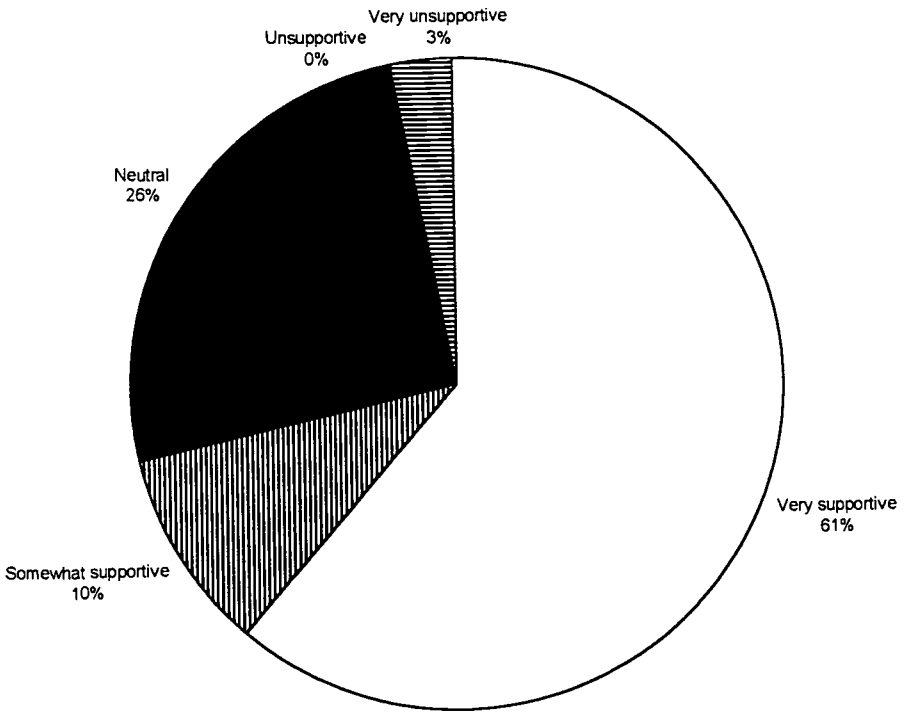
Table 7: Support of Distance Learning Technology by Stakeholders

Stakeholder Group	% supporting
Students	75%
Teachers	67%
Administrators	89%
Other Certified Staff	83%
Parents	100%

- It is interesting that the teachers were seen as the least supportive group. Through interviews with involved staff, it seems that there is a fear among certain teachers that this technology will replace them and they will lose their jobs.

Parents seemed generally supportive of distance learning opportunities being provided to their children. Figure 6 below shows how supportive students felt their parents were towards their taking a distance learning course.

Figure 6: Parental Support



When students were asked how they liked distance learning virtually all participating students responded favorably – although many followed this statement by saying that they still thought the traditional face-to-face classroom was better. Again, students as well as faculty appear to be very supportive of distance learning as long as it is used as an *enhancement* and not a *substitute*.

> **"I think its a great system but I don't think it can ever replace a regular teacher in the classroom."** – participating student

> **"Besides the scheduling conflicts I think this is a good way to teach."** – participating student

Generally, students thought there grades were comparable and felt that they had learned an adequate amount in their course(s), although perhaps not as much as in a traditional classroom. Specifically, 61% of students and 56% of staff agreed or strongly agreed with the statement that students learned as much in a distance learning course as they would in a regular classroom.

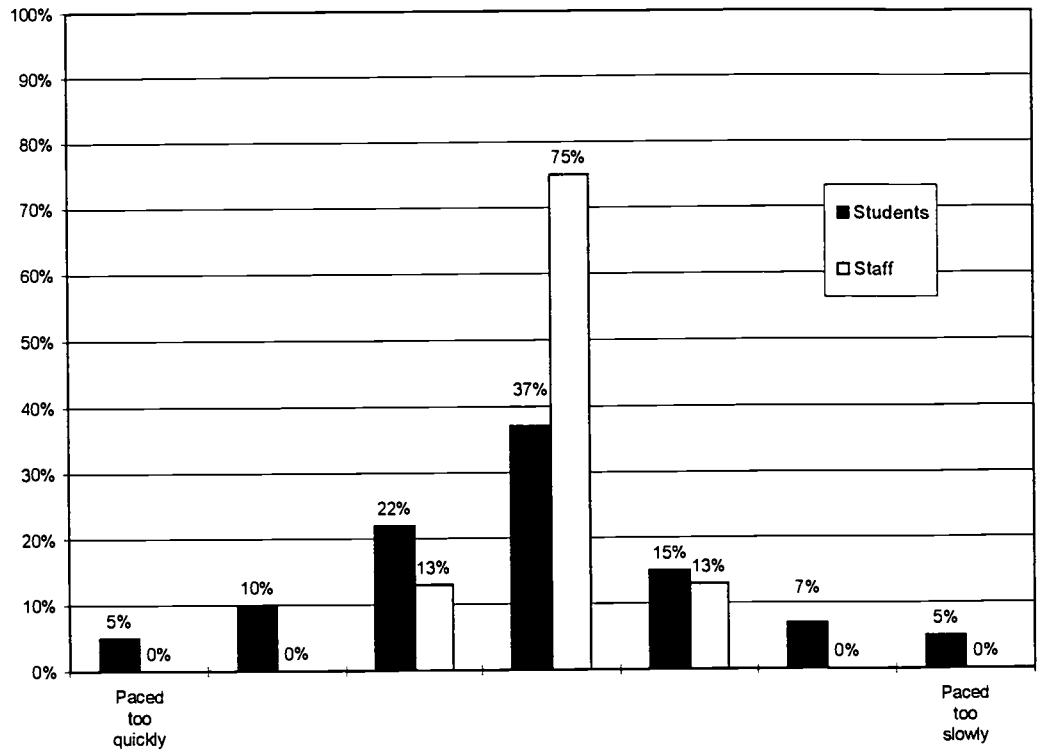
> **"I think a satellite course is definitely more challenging than a regular classroom. Especially because college classes are a lot harder than high school. I'm not doing nearly as well as I thought I would."** --participating student

On a survey question which asked how they performed in the distance learning course relative to a traditional class, 57% said about the same, 21% better, and 10% worse. Those who said they performed worse were asked what they thought the reasons were. In decreasing order of frequency, their reasons were: 1) no outside help; 2) did not study enough; and 3) directions were not clear.

When asked to state their reasons for enrolling in a distance learning course, 52% said it was because they were interested in the subject matter, 43% said it was to take a course previously unavailable to them, 36% to be challenged, 24% to have the interaction with other kids, and 21% for the college and high school credit. Almost ¾ (73%) of students responding to the survey said that they would enroll in another course taught via compressed video. In addition, 83% said that they would recommend the course they had taken to other high school students, and 88% thought that their high school should continue to offer courses by compressed video.

Students and staff were asked to rate the distance learning course(s) they participated in on the following areas: pace of course, level of interest, difficulty, and how worthwhile the course was. Figures 7 thru 10 present the results to these survey questions. Note that responses were given on a rating scale of 1 to 7.

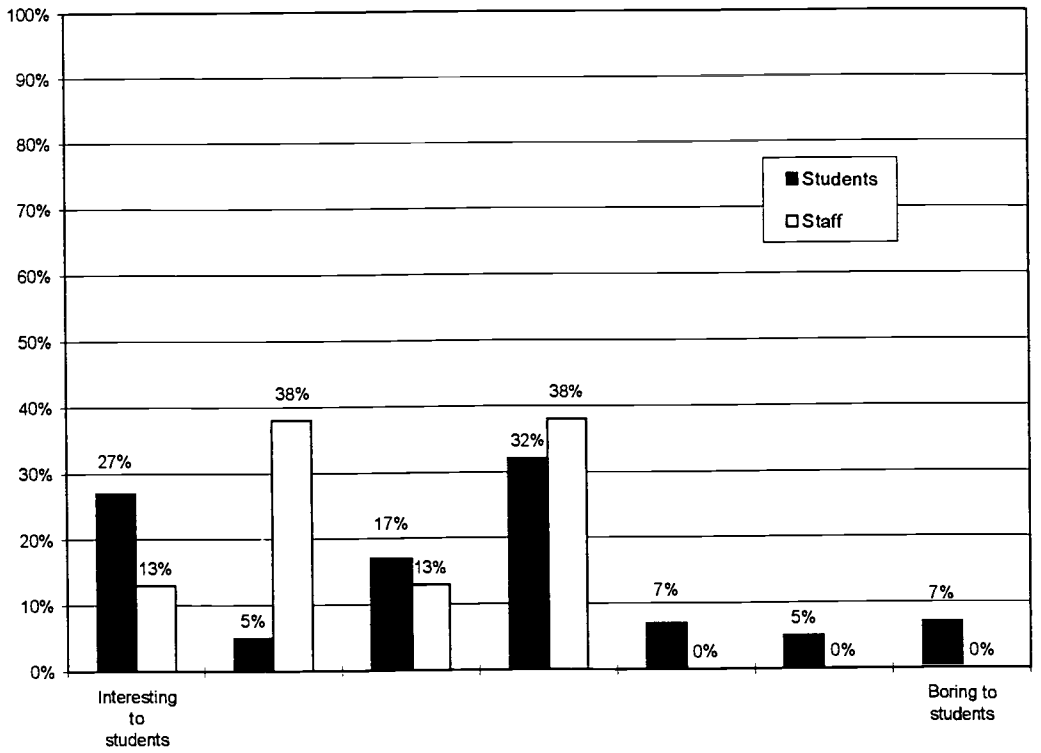
Figure 7 : Pace of course
Students and Staff*



* Using this scale, ratings in the middle are more favorable than are ratings at either end of the extremes.

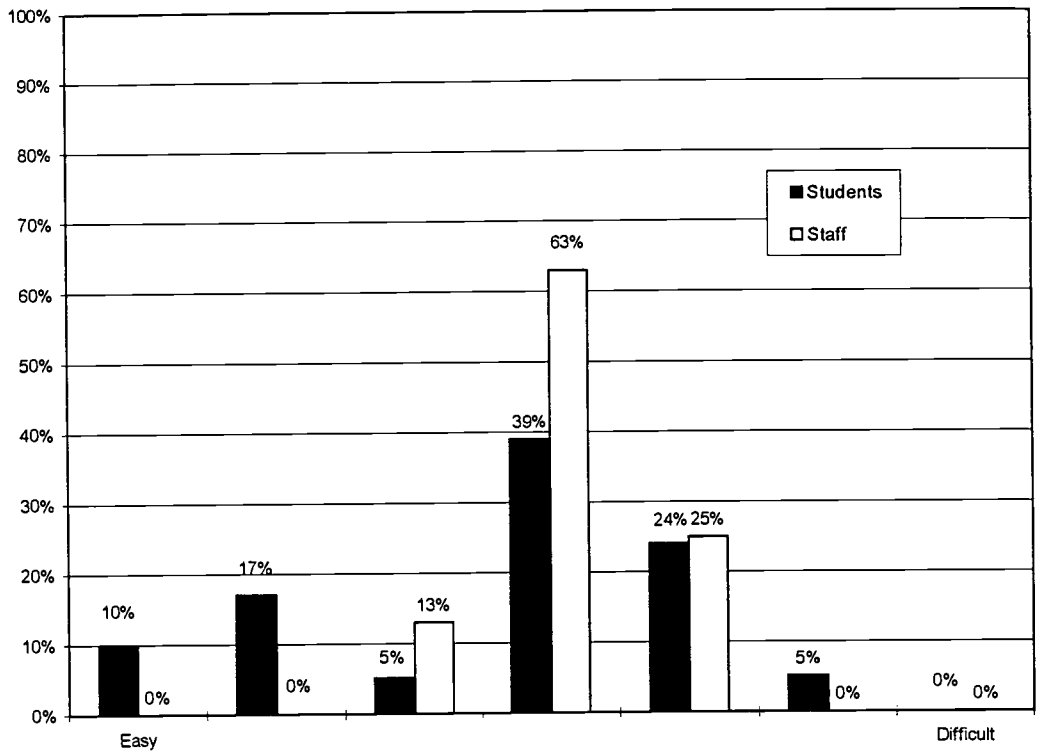
- The majority of staff respondents felt that the distance learning courses were paced about right.

Figure 8: Course Level of Interest
Staff and Students



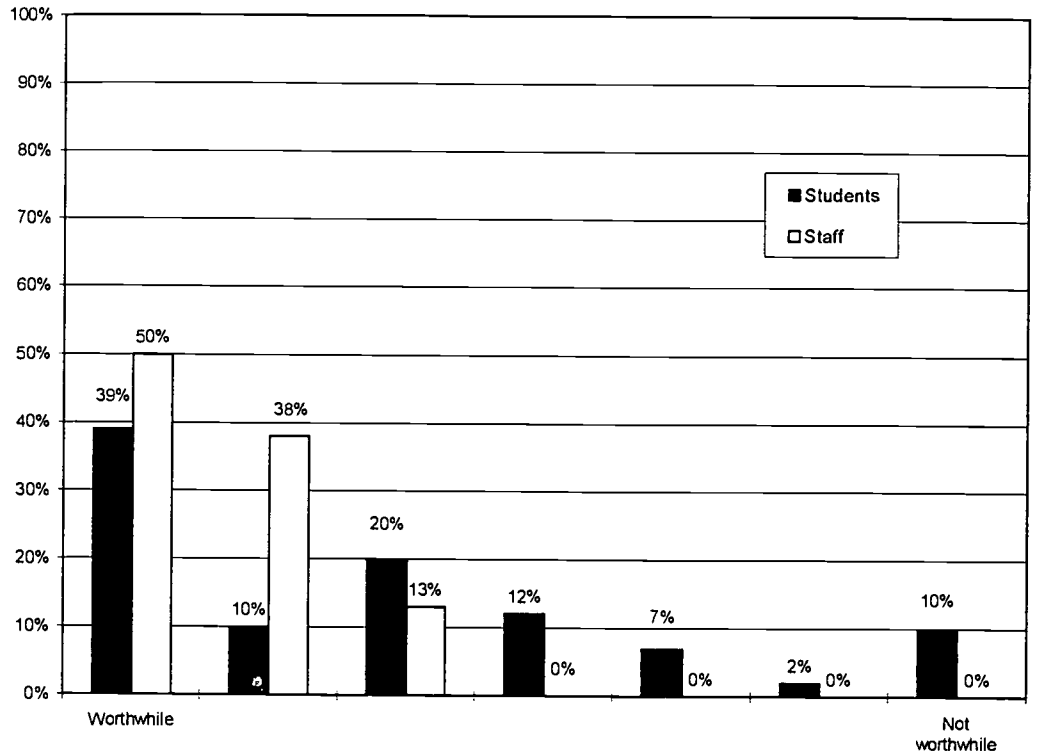
- Students and staff generally felt that the distance learning courses were interesting to students.

Figure 9: Difficulty of Course*
Students and Staff



* Using this scale, ratings in the middle are more favorable than are ratings at either end of the extremes.

Figure 10: Course Usefulness



- Overall, only 12% of students said that the course they participated in was not worthwhile (e.g., rated a 6 or 7).

In a separate survey item, students were asked their opinions of the amount of material covered in each course. Table 8 shows the responses to this item overall and broken out by distance learning course.

Table 8: Amount of Material Covered in Class
Student Response

	Overall	Math	Business	English	History	Career Planning	Social Problems
Too much	23%	50%	0%	27%	29%	8%	25%
About right	53%	50%	100%	47%	71%	42%	75%
Too little	23%	0%	0%	27%	0%	42%	0%

Community and Business Involvement

As noted previously, the timeline associated with the pilot project prevented the participating sites from using the compressed video in areas other than providing coursework to their own students. Certainly, this technology has the potential to benefit the broader community at large in terms allowing for open enrollment in a variety of classes and ventures that could be held in the evenings. Future projects should look closely at how such technology can be used to benefit the private community. A concerted effort should be undertaken to promote business and community involvement with any distance learning program.

Once the interactive system is operational, research has shown that there are a multitude of additional projected uses for compressed video that remained untapped by the pilot project. These include including such things as training for fire and police departments, informational town programs and adult education (Pietras & Murphy, 1991).

> **"We never intended it to be a single-purpose network, the more people using it, the more it contributes to the quality or rural life." (Kansas State Board of Education, 1993, p.10).**

Elsewhere, area medical professionals have used compressed video to confer with specialists from the larger cities while staying close to home. In addition, other programs have found that certain populations really benefit from the adult education opportunities provided via compressed video. Specifically, Koontz (1989) stated that the majority of adult education students are often restricted geographically and consist of married females in their mid-thirties who have dependents.

It seems that, with proper marketing and communication, business will begin to grasp the possibilities of this communication tool. Some distance learning programs have offset their own costs by forming partnerships with business and industry. These are often mutually beneficial relationships in which businesses gain substantial savings in time and travel costs and, in turn, as their contribution to the partnership may donate equipment, products and services as well as financial assistance. Businesses will often provide support to distance learning projects, because it may mean the preservation of a rural school, and ultimately the preservation of these rural businesses (Kansas State Board of Education, 1993).

Although this pilot project was not able to go into this area. It seems advisable that future studies and projects might look into such partnerships and how they might be set up.

VI. A Macro Perspective: Planning, Policies and Governance Structure

Everyone involved in the pilot project, while enthused, felt that they needed time to plan for incorporating this technology into their schools:

> **"Given a year to prepare we can do this right. We can move our schedules together, arrange for supervision, etc."** -- participating staff member

Indeed, the research shows that *introducing this type of technology without adequate forethought and planning is probably one of the most important contributors to the failure of any distance learning program:*

> **"The most successful distance education programs are those that respond to real needs; that offer an alternative to learning which would otherwise be denied or would be prohibited in terms of cost and time. . . . . The least successful are those that embrace technology without a clear understanding of who is to be served, with what type of instruction, and most important of all, for what purpose." (Ely, 1996, p. 1-2).**

In many instances, distance learning has by no means represented a coherent and systematic approach to curriculum design. As part of the planning process, it is imperative to define the educational needs which must be met, identify all stakeholders and the expectations of the specific stakeholders involved, clearly describe the technology, its intended uses, describe the exact context in which the technology is used and, last but not least, fully and clearly articulate the expected outcomes for this technology.

> **"The seeming urgency to initiate distance learning programs often bypasses the "front-end analysis" or "needs assessment" in an attempt to immediately capture the opportunities of contemporary technologies that are pleading to be employed for noble causes." (Ely, 1996, p. 2).**

Successful distance learning programs are not *technology driven.* If there is not a coherent, well planned program addressing significant educational needs with quality courses, enthusiastic and well trained teachers and ongoing funding to maintain and repair the equipment, the new machines will remain idle or, perhaps worse, fail to bring any meaningful learning results.

Planning Issues

In planning distance learning programs it is key to get the early and regular involvement of key parties. All collaborative and innovative educational programs depend on the enthusiastic support of all parties. Input from policy makers, administrators, teachers, program developers, and institutions of higher education or businesses should be solicited. Participant consensus on the project's goals, scope, support systems and evaluations is vital to success.

The following checklist is an example of the topics which may be included in planning a distance learning program:

Management and administrative structure
Personnel duties and responsibilities
Hours of operation
Scheduling procedures
Technical support
Point of contact
Facility maintenance contractor
Professional development
Teacher procurement and personnel selection
Certification and/or training requirements of involved personnel
Course management plan
Attendance guidance
Distribution of instructional materials
Coordination and guidance
Network specifications
Cancellation guidance
Security issues
Local/remote site requirements
Facilitators role

As described in the body of this report, many of the topics listed above were brought up repeatedly by program participants. In particular, an issue foremost in the minds of many educators was that there is a need to characterize who the learning audience for this technology will be. Such a characterization would include projections in terms of current and potential numbers, their age, sophistication, geographic concentration and whether the planned coursework will be elementary, secondary or adult. These classes must be designed as to whether they will be remedial, basic or advanced and must be tailored to meet the real needs of those identified student groups. Thought needs to be given to such questions as: Are there instructional situations in which one mode of instruction is more useful or effective than another? Are there student characteristics such as learning style which make a student more suited to one mode than another? Is a distance course suitable only for students who are demonstrably self-motivated and self-disciplined? In other words, should policy encourage the use of a wide range of systems with students of a wide range of characteristics, or limit usage based on some assumptions about factors most likely to provide success?

Additionally, questions pertaining to what effects statewide implementation will have on educational quality must be addressed. What, if any, requirements will there be regarding the certifiability of teachers and on-site monitors? What will be done to ensure the quality of course provision? What mechanisms will be in place to review courses for quality and appropriateness? Will there be state standards for teacher certification, maximum class size, and student/teacher contact hours? Who will control and direct distance learning

projects? One approach may be to open the door to local experimentation and the opportunity to use different options, but also requiring an evaluation report of the experience.

What degree of technical and programmatic compatibility will be required from region to region, if any? Some states (such as New York and California) support several independent educational telecommunications systems that have little coordination in terms of planning and compatibility with one another. This has proven problematic in many ways although, it has left the door open for some schools and other educational agencies to implement a bottoms-up, grass roots approach to distance learning which, in some instances, has encouraged entrepreneurial endeavors and independent problem solving.

There are advantages and disadvantages to statewide coordinated planning. The principal advantage is an efficiency and cost-effectiveness that derives from coordinated action, group purchasing and non-redundant acquisition of telecommunication services and instructional and administrative software. The main disadvantage of coordinated planning is that, without adequate needs assessment and dialog with localities, a monolithic approach may be taken to distance learning. By contrast, local planning assures that the specific needs of local schools are accounted for. In contrasting this "top-down" vs. "bottom-up" approach to planning, each type of approach has its supporters, but generally top-down statewide planning is favored by many educators – so long as the state agency is perceived as responsive to local programmatic, technical and financial needs (Hezel, 1991).

In looking at who controls and directs distance learning projects, the state may set a clear direction for putting forth a central plan or by encouraging district initiatives. Regardless of the approach Wyoming chooses to take, it is inevitable that the state will have a strong influence upon local decision making by its funding patterns, curriculum guidelines, certification standards, provision of local technical assistance, and, perhaps most importantly, articulating educational goals.

VII. Summary & Recommendations

> **"It has been a wonderful experience and I have kids and parents that are saying when do we find out if we get to keep it. And my response is that it is a pilot project, it is here until the 15th of June or whenever they are pulling the equipment out and they will be evaluating the system and will go from there and keep our fingers crossed and hope that it is something that the state thinks is valuable enough to invest in. Because I never remember what it goes like but Wyoming is a small town with long streets. I think some of those streets would get a little shorter."** – participating staff member

In sum, did program participants like the distance learning technology? To this, one may answer a resounding YES! Perceived benefits associated with this pilot project include: expanding curriculum offerings; allowing for friendships and interaction to develop across

district lines; and exposing students to different teachers as well as subject matters. Such participants stated that they would like to have this technology available to them in the future. They felt that, with planning, students, staff, schools, districts and surrounding communities could reap substantial benefits from this technology.

Although many participants stated that they were more than happy to be involved in this "pilot" project, most would also say that they would have several reservations if asked to do this on a long-term basis ***without the necessary supports***. This last phrase is critical, because probably the most encouraging, prevalent, and striking finding from this pilot project is that, at the end of the semester, almost all participants were highly enthusiastic and supportive of distance learning and were optimistic about its potential in their schools. Most wanted to keep it *with some modifications.* Such modifications include providing for adequate professional development, staffing, technology, time, compensation, planning and leadership. Arguably, all of these pieces are absolutely essential to whether distance learning in Wyoming will add to the education of students or simply waste resources.

As well as providing us with substantive data regarding what will be required to implement this technology, the results of this pilot evaluation has led to many more questions. Many of these questions revolve around policy level issues such as: What will this technology be used for (in terms of subject matter, course provision, etc.)? How will these uses be linked to identified needs? Who will be the target audience(s) be for the compressed video technology? Who will be involved and what will the roles and responsibilities be of involved personnel?

A very important *next step* for distance learning in Wyoming is that a comprehensive needs assessment needs to be undertaken. Such an assessment is needed to: 1) identify existing equipment and space resources currently available in schools which could be dedicated to the distance learning classrooms; 2) assess the current level of technology equipment in schools in terms of both hardware and software; 3) identify where the shortages are in Wyoming in terms of teachers and specific subjects; 4) acquire a wish list of desired courses and other uses for the compressed video technology; and 5) obtain projections regarding current and future enrollment and utilization of distance learning activities. Consideration of many of the details specified in this report can fruitfully proceed only when the needs to be filled are clearly identified via a systematic, well-conducted data collection process.

Next, policymakers may want to consider retaining an outside consultant to assist in reviewing the responses to any telecommunications RFP. Such an outsider would need to be well versed in the latest technology and be able to provide recommendations based on the needs, geography, and student population of Wyoming. This person should be available to help make independent determinations regarding the feasibility of different technologies and characteristics of the technologies as well as considering various purchasing or leasing options. Although, it is essential that someone who is well-versed in the technology be present during the planning process, in some cases, having vendor(s) fulfill this role may be inadvisable due to commercial self-interest.

If the issues outlined in this report are not incorporated into future distance learning endeavors, the difficulties encountered by pilot sites will become manifest on a statewide basis. However, the potential for this technology is great if it is done with realistic expectations regarding planning, uses and supports.

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Appendix A

Appendix A contains copies of those instruments which were used to collect data during this pilot. These instruments follow in this order and are separated by divider sheets:

- logs used by involved staff (including facilitators, instructors, and administrators) to track relevant information about use of equipment, enrollment and attendance of students, technological problems, professional development, costs, etc;
- logs used by technology providers to track equipment provided, as well as costs and time associated with maintenance and support of equipment;
- methodology and interview protocol for visits to four sites; and
- sample surveys administered to staff and student participants.

Sample Logs - Used by Staff

COMPRESSED VIDEO
SUMMARY SHEET OF USAGE

Use of the compressed video for <u>any</u> purpose (instructional or non-instructional) needs to be documented in the log provided below. Please fill out <u>all</u> the pertinent information. This log should be kept in a conspicuous location next to the compressed video equipment at all times.

Participating Institution: _____

Date	Begin time	End time	Total time of use	# of persons participating in session at your site			Type of activity			Delivery System	Please put your initials
				Number of students	Number of staff	Number of others *(Specify who)*	Math Class	Other Class: *(Specify)*	Other Use: *(Describe)*	(e.g., 2-way, 1-way, etc.)	

STUDENT ENROLLMENT DATA

Distance Learning Advanced Math Course

Participating Institution: _____

Enrollment data for Advanced Math	Total # of Students Enrolled	Gender		Grade				Average GPA	Class Percentile Rank			Ethnicity	
		# of Males	# of Females	# in 9th	# in 10th	# in 11th	# in 12th		Total # in top 10%	Total # in top 25% *	Total # in bottom 25%	# Caucasian	# Other : *Specify*
Start of Semester (Date: _____)													
End of Semester (Date:_____)													

** This figure should count those students already listed as being in the top 10%.*

1. How were students selected to participate in this course?

2. Were any students not allowed to take the course who wanted to? *Please elaborate.*

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Form DL-3

COST TRACKING SHEET

Pilot Distance Learning Project

Please record any costs your district incurs which directly relate to the provision of distance learning opportunities to your students. The State and the cable company are assuming much of the financial burden of this pilot project, however, it is necessary to track all related incidental costs in order to provide a complete picture of the resource requirements for distance learning.

Participating Institution: _____

COST AREA	Date	$ Cost	Description	Date	$ Cost	Description	Date	$ Cost	Description
Equipment									
Operating & Maintenance Expenses									
Staff Time/Salaries									
Line Use Fees									
Postage									
Photocopying									
Phonecalls									
Other Supplies *(Specify)*									
Other *(Specify)*									

Form DL-4

PROFESSIONAL DEVELOPMENT RELATED TO DISTANCE LEARNING

ACTIVITY LOG

Participating institution: _____

Name _____ Position _____

Date of Training	Length of Training	Who Provided the Training	Who Attended the Training (# in attendance & job titles)	# of Special Education Teachers Participating	Content of the Training (e.g., topics covered)

Technical Problems and/or Logistical Issues Encountered

DISTANCE LEARNING PROBLEM REPORT SHEET

Please complete this form for each technical problem or problematic logistical issue encountered while using the compressed video technology.

Participating institution: _____

Name _____ Position _____

1. Describe the problem encountered:

2. Specify the date and time the problem first occurred:

3. What was the compressed video being used for when this problem arose?

4. What actions were taken to remedy the problem?

5. Was external assistance required to fix the problem?
   ___ Yes
   ___ No ***(Skip to #7)***

6. How long did it take for:
   you to talk with someone who could help you?

   Someone to come and fix the problem?

7. Please specify the date and time the problem was fixed:

8. Anything else we should know? *Elaborate.*

DISTANCE LEARNING PILOT STUDY
TEACHER/STUDENT CONTACT LOG

Date of initial student contact	Mode of contact	Nature of student question/comments	Support provided by instructor	Referrals made by instructor

DISTANCE LEARNING PILOT STUDY
INSTRUCTOR EXPENSE LOG

Date	Item Purchased	Cost of Item	Reason for Purchase

Sample Logs - Used by Technology Providers

DISTANCE LEARNING TECHNOLOGY INVENTORY
TCI CABLEVISION

Please indicate what equipment, including related components, was provided to the pilot sites. Please also describe any general characteristics about the equipment provided.

EQUIPMENT	NAME OF SPECIFIC SITES	DESCRIPTION
Satellite receiver:		
TV Monitor:		
VCR:		
Telephone:		
Video camera:		
Audio Tape Recorders:		
Modem:		
Computers:		
Fax:		
Other: *Specify*		
Other: *Specify*		
Other: *Specify*		

EQUIPMENT	NAME OF SPECIFIC SITES	DESCRIPTION
Other: *Specify*		
Other: *Specify*		
Other: *Specify*		
Other: *Specify*		
Other: *Specify*		
Other: *Specify*		
Other: *Specify*		

DISTANCE LEARNING
TECHNICAL SUPPORT LOG
TCI CABLEVISION

Date of initial contact	Specific site and name of contact	How contact was handled (phone, etc.) - How problem was directed	Problem as it was reported	Support required (time and expenses)	Assistance outside TCI required to fix the problem	Date problem was solved

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PROFESSIONAL DEVELOPMENT RELATED TO DISTANCE LEARNING

TCI CABLEVISION ACTIVITY LOG

Date of Training	Length of Training	Site of Training	Who Provided the Training	Who Attended the Training (# in attendance & job titles)	Content of the Training (e.g., topics covered)

Site Visit Methodology
Interview Protocols

PILOT DISTANCE LEARNING PROJECT
Methodology for Site Visits

The methods employed during the site visit will include a combination of 1) face-to-face interviews; 2) focus groups; and 3) classroom observations. The methods to be employed for each respondent group consist of the following:

- **Face-to-face interviews with school staff** involved with the distance learning project (including administrators, teachers, and support staff). A snowball sampling technique may be the most effective technique to use here. This consists of having respondents nominate who else would be useful to talk to or specifying who else is involved with the pilot project.
- **Conduct a focus group** with a **randomly chosen group of students (five or six) who are currently enrolled** in the compressed video class.
- **Face-to-face interviews with one or two students who dropped out** of the distance learning course during the semester.
- **Observation of the compressed video class** at each site using the attached checklist.

In terms of general procedures to be followed, I suggest that you:

- Contact each individual site and schedule the initial interviews ahead of time.
- Assure all respondents of the confidentiality of their responses. Ask their permission to audiotape the interview(s) and focus group(s).
- Take fieldnotes during the interview(s) and observations. It is often useful to elaborate on these notes immediately after the data is collected in order to clarify the issues that emerged while it is still fresh in your mind.
- Keep a record of the school/district staff involved in the distance learning project at each site. This would include a list of names/contacts, their roles and corresponding phone number. This will be useful in case we need to contact people for follow-up telephone interviews.
- Tell them that they will be asked to complete a questionnaire on the distance learning project at the end of the semester and that they may be contacted by phone if we are in need of clarification of any issues,etc.

Important guidelines for interviewers include the following:

- At the start of every interview, it is important to establish a rapport. The first step in doing so is to explain the purpose of the study and how the particular interview fits into the design. This is also a good time to assure confidentiality and allay any concerns regarding whether the information will be used in an adverse manner towards the school and/or particular individuals.
- The format of these interviews will be semi-structured. That is, although a list of interview questions and issues to be explored is provided, the interviewer may also ask follow-up questions, probes or ask for elaboration based upon the responses received.

SITE VISIT EVALUATION QUESTIONS
SCHOOL STAFF

Respondents: These questions should be asked of teachers, support staff, and administrators who are involved with the pilot distance learning project. This would include anyone in the roles of school coordinator, supervising teachers, tutors/teacher aides, etc.

- To what extent and in what ways are you involved in the distance learning program?
- What distance learning activities make demands on your time, and how much time do they require?
- Why did your school volunteer to participate in this pilot project? What needs did you/your school think it would fulfill? (e.g., provide elementary enhancement, expand secondary curriculum offerings, offer staff development, community programs, etc.)
- Can you briefly discuss the variety of ways that you/your school have used/are using the compressed video?
- How do you foresee your district using the compressed video in the future?
- I'm going to ask a couple of more detailed questions regarding the instructional uses of the compressed video. Specifically, what types of courses do you think this technology would be appropriate for? What types of students do you think will be most likely to use and/or be successful via this instructional method?
- What level of satisfaction and/or support do you perceive _____ to have regarding the compressed video/distance learning technology?
  administrators
  staff involved with it
  staff not participating directly with it
  students
  parents
- What resources are necessary in terms of _____ in order to adequately support the project and promote effective implementation of distance learning? What was available?
  staffing? - general project support and coordination
  technical assistance?
  staff development? (identify the top three training need areas)
  student support? (e.g., materials, tutoring, answering questions, distributing and collecting assignments, etc.)
- How much contact/cooperation has occurred between school sites? Between the distance learning teacher and teachers at the receiving site? Between students and the distance learning teacher?
- From your perspective, what obstacles need to be overcome in order to use the compressed video technology effectively in your school/district?
- Do you wish to make any other comments?

SITE VISIT EVALUATION QUESTIONS
CURRENTLY ENROLLED STUDENTS

Respondents: *these questions should be asked of students currently enrolled in the distance learning course. If there is insufficient time to conduct face-to-face interviews this could also be conducted in a focus group format with five or six students at a time.*

- Why did you choose the distance learning course?

- In your distance learning course, who provided assistance to you in _____? Was this adequate?
  getting materials and resources
  turning in assignments and getting them returned in a timely manner
  helping you with any questions or problems
  providing additional tutoring or instruction
  recording your progress

- How do you feel about the amount of contact you have had with your distance learning instructor? How about with other students taking the same class?

- In your opinion, how does distance learning compare to the traditional face-to-face classroom?

  Follow up questions:
  1. Did you learn as much as in regular classes (e.g., learn an "adequate amount")?
  2. How do your grades compare between the distance learning course and courses taught locally in your school?

- Given your experience thus far, would you continue to take courses through distance learning?

- Finally, if you could make changes to how the distance learning program was implemented, what changes would you like to see?

- Do you have any other comments?

SITE VISIT EVALUATION QUESTIONS
DROP-OUT STUDENTS

Instructions: *identify a couple of students who dropped out of the distance learning at each site and interview them.*

- Was your decision to drop this course influenced by the fact it was delivered over compressed video? If yes, what were the primary reasons? (e.g., technology, quality of instruction, quality of instructional materials, monitoring of the class).

- Do you have any other comments regarding the compressed video which you would like me to note?

Classroom Observation Checklist

Instructions: *Please write in comments regarding each item on this checklist as you are observing the distance learning class. In addition, please make a note of anything else you feel is noteworthy as it relates to the classroom management and implementation of the distance learning course (either on this same sheet or on a separate sheet of paper which can be attached to this one).*

1. Are the classroom facilities adequate in terms of light, size, and a minimum of disturbances?

2. Is the equipment in good working order? (e.g., good reception, clear audio, etc.)

3. Who else is in the room besides the students? (e.g., is there anyone supervising the reception room? What about the presence of tutors?)

4. Is the instructor effectively using this delivery medium for his presentation? Make a note of the use of visual aides such as props and written materials, purposely trying to "reach out to students", and calling on specific students to contribute to the class.

5. How much opportunity do students have to interact with the teacher during class? With other distance learning classes? With other students within the same classroom? Make a note of students talking with one another in a positive way (e.g., informal peer tutoring) versus talking in a disruptive manner.

6. Please make a note about what types of interaction you felt were most useful in this classroom and highlight areas which could be improved.

Survey Instruments
Staff and Student

Wyoming Department of Education
Distance Education Staff Survey
May, 1997

The Wyoming Department of Education (WDE), policymakers and practitioners are all very interested in your experiences with the pilot distance learning project. The information you provide during this preliminary evaluation will be used to inform state policymakers about the distance learning program and help provide insight into the types of support necessary to promote effective implementation of distance learning on a statewide basis. Since the pilot project was conducted in only four schools, your responses are ***very important*** *to us. No name is required on this survey -- your responses are entirely confidential.*

This survey should be completed by any staff member in your school who has been involved with the distance learning pilot project. You may use either pen or pencil to circle the responses directly on this questionnaire. *The completed survey should be given to the distance learning "site coordinator" who will collect and mail them to the Center for School Improvement, P.O. Box 4605/292 E. Pearl, Jackson, WY 83001.*

We are grateful for all your assistance and would appreciate any comments regarding any aspect of data collection pertinent to this evaluation, including suggestions on how to reduce the burden for program participants. Please call Mariam Manley at the Center for School Improvement at (800)245-2631 with any of these comments or if you have any questions about the survey.

Part A: About You

1. Which school do you work at?
   a. Guernsey-Sunrise High
   b. Hulett High
   c. Kaycee High
   d. Little Snake River Valley High

2. Which *best* describes your job?
   a. Teacher
   b. Instructional aide
   c. School administrator
   d. District administrator
   e. Media specialist
   f. Counselor
   g. Other: **Specify** _____

3. Which distance learning course(s) were you involved in this past semester? ***(Circle all that apply)***
   a. Math
   b. Business
   c. English
   d. History of U.S. West
   e. Career Planning
   f. Social Problems
   g. Internet
   h. Other: **Specify** _____

4. In what ways have you been involved with the distance learning project this past semester? ***(Circle all that apply)***
   a. Take attendance
   b. Monitor students
   c. Distribute handouts
   d. Collect homework
   e. Proctor tests
   f. Operate equipment
   g. Serve as the liaison between the distance learning (DL) teacher and the students at the local site
   h. Managed the interaction between students and the DL teacher during broadcasts
   i. Supplemented DL instruction with other learning activities
   j. Helped students with content questions on the subject matter and/or with assignments
   k. Other administrative duties
   l. Other: **Specify** _____

5. Approximately what *proportion of your work time* was devoted to distance learning activities this past semester?

   a. Under 10%
   b. 10% to 25%
   c. 26% to 50%
   d. 51% to 75%
   e. 76% to 100%

6. Which ***best*** describes the impact that the distance learning program had on your work load during the past semester:

   a. my work load was reduced in other areas so that I could devote time to the distance learning program
   b. I was provided with additional compensation/perks for the time I devoted to the DL program
   c. It was an added responsibility without any load compensation.
   d. Other: **Specify** _____

Part B: About Distance Learning

Please rate your agreement with each statement using the following scale:
1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree 6=Don't Know

7. The DL instructor collected enough evidence for valid grading. 1 2 3 4 5 6
8. I can easily contact the DL teacher if I need to..... 1 2 3 4 5 6
9. Assignments and tests are returned to students in a timely fashion. 1 2 3 4 5 6
10. DL support personnel should remain in the classroom throughout the class period. 1 2 3 4 5 6
11. Student discipline was ***not*** a serious problem in the DL class..... 1 2 3 4 5 6
12. Students were very attentive during the DL class. 1 2 3 4 5 6
13. Students put a lot of energy into what they did for the DL class. 1 2 3 4 5 6
14. The sound quality on the DL system was adequate. 1 2 3 4 5 6
15. The TV screen was large enough to clearly see the information presented by the teacher..... 1 2 3 4 5 6
16. Scheduling a time for students in our school to participate in the DL class(es) was difficult. 1 2 3 4 5 6
17. Staff received needed materials for the distance learning project 1 2 3 4 5 6
18. Staff received adequate technical support for the distance learning project..... 1 2 3 4 5 6
19. Staff was prepared to operate the equipment..... 1 2 3 4 5 6
20. The DL course allowed for adequate interaction between the students and the **instructor** 1 2 3 4 5 6
21. Students had more of an opportunity to engage in peer tutoring during the DL class than they would typically have during a regular class. 1 2 3 4 5 6
22. Students learned as much in this course as they would in a regular course 1 2 3 4 5 6
23. This high school should continue to offer courses by compressed video. 1 2 3 4 5 6
24. I prefer staff development training offered via TV rather than traveling to a different location away from my home or school..... 1 2 3 4 5 6

25. Using the scale below, please indicate how well distance learning has been received by the following entities at your school:

	Very Well				**Not Well At All**	**Don't Know**
Students.....	1	2	3	4	5	6
Teachers.....	1	2	3	4	5	6
Administrators.....	1	2	3	4	5	6
Other Certified Staff.....	1	2	3	4	5	6
Parents	1	2	3	4	5	6

26. In your opinion, how important are the following factors to having a successful distance learning experience:

	Very Important				Not At All Important
technical expertise	1	2	3	4	5
ability to adapt curriculum or subject matter to the medium	1	2	3	4	5
a large screen for viewing	1	2	3	4	5
interaction among participants at all sites	1	2	3	4	5
two way video and voice communication among all sites	1	2	3	4	5
workbook materials	1	2	3	4	5
lecture notes to supplement the DL course	1	2	3	4	5
a teacher with "show business" or communication skills	1	2	3	4	5
a staff member present at each site during the broadcast	1	2	3	4	5
staff development regarding appropriate use of media	1	2	3	4	5
Other: **Specify** _____	1	2	3	4	5

27. On the scale below please indicate how frequently the following types of opportunities were made available to students in distance learning classes this past semester:

	Weekly	**Monthly**	**Occasionally**	**Rarely**	**Never**
a. Students worked together *within the classroom* on activities	1	2	3	4	5
b. Students engaged in peer tutoring	1	2	3	4	5
c. Students worked with students *from other schools*	1	2	3	4	5
d. Students worked with a variety of materials	1	2	3	4	5
e. Individual students were called on by name to contribute to the class	1	2	3	4	5

Please circle or write in your responses as appropriate.

28. What do you feel are the appropriate uses for compressed video technology at your school? ***(Circle all that apply)***
    a. Provide additional courses to students
    b. To supplement or enhance the instruction of existing courses
    c. To provide professional development
    d. Videoconferencing
    e. Other: **Specify** _____

29. Do you feel that distance learning is appropriate for *any subject matter*?
    a. Yes **(Skip to #31)**
    b. No

30. Which subjects or types of courses do you feel distance learning would ***not*** be appropriate for?

    _____

    _____

31. Do you feel that distance learning is appropriate for *all types* of students?
    a. Yes **(Skip to #33)**
    b. No

32. Which types of students do you feel it ***would not*** be appropriate for?

    _____

    _____

    _____

For each pair of statements, please circle the number in the position which best describes your opinion about the distance learning course(s) you were involved in this past semester:

33. *THE DISTANCE LEARNING COURSE WAS . . . . .*

Paced too quickly	1	2	3	4	5	6	7	Paced too slowly
Interesting to students	1	2	3	4	5	6	7	Boring to students
Easy	1	2	3	4	5	6	7	Difficult
Worthwhile	1	2	3	4	5	6	7	Not worthwhile

Please circle the number in the position which best describes your perception of <u>how students' experiences with distance learning compared with student experiences in regular classes</u> in similar subjects. (You may leave the items blank if you have not worked with students in similar regular classes)

34. *STUDENTS . . . . .*

enjoyed DL more (than regular classes)	1	2	3	4	5	6	7	enjoyed DL less (than regular classes)
learned more in DL classes	1	2	3	4	5	6	7	learned less in DL classes
were more attentive in DL classes	1	2	3	4	5	6	7	were less attentive in DL classes
had better attendance	1	2	3	4	5	6	7	had poorer attendance
were given more supplementary materials in DL classes	1	2	3	4	5	6	7	were given fewer supplementary materials
were more likely to work together in DL classes	1	2	3	4	5	6	7	were less likely to work together in DL classes

Thank you for your cooperation in filling out this survey! We welcome your comments:

Wyoming Department of Education
Distance Education Student Survey
May, 1997

The purpose of this survey is to obtain information on the pilot distance learning program that your school participated in this past semester. Please answer the following questions based upon your experience in this semester's course delivered through the interactive video system. ***You may use either pen or pencil to circle the responses directly on this questionnaire.*** *Remember, no name is required on this survey -- your responses are anonymous.*

Thank you in advance for filling out this questionnaire, your opinions are very important to us!

Part A: About You

1. Which school do you attend?
   a. Guernsey-Sunrise High
   b. Hulett High
   c. Kaycee High
   d. Little Snake River Valley High

2. What grade are you in?
   a. 9th grade
   b. 10th grade
   c. 11th grade
   d. 12th grade

3. What is your sex?
   a. Female
   b. Male

4. Compared to other students in your class, what kind of student would you say you are?
   a. One of the best
   b. Far above the middle
   c. A little above the middle
   d. In the middle
   e. A little below the middle
   f. Far below the middle

5. Which distance learning course did you participate in this past semester? **(Mark all that apply)**
   a. Math
   b. Business
   c. English
   d. History of U.S. West
   e. Career Planning
   f. Social Problems
   g. Internet
   h. Other: Specify _____

6. What kind of grade do you expect to receive in this distance learning course? **(Mark all that apply)**
   a. A
   b. B
   c. C
   d. D
   e. F
   f. Don't Know

For each pair of statements, please circle the number in the position which best describes you:

7. ***I PREFER TO . . . . .***

Work under close guidance & supervision	1	2	3	4	5	6	7	Work independently
Work on projects alone	1	2	3	4	5	6	7	Work on projects with other students
Take responsibility for learning myself	1	2	3	4	5	6	7	Have the teacher determine what and when I should I should learn things

Part B: About Your Distance Learning Class

Please rate your agreement with each statement using the following scale:
1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree

8. My distance learning course was presented in a well-organized way. 1 2 3 4 5
9. The distance learning (DL) instructor used adequate visual aids. 1 2 3 4 5
10. The DL instructor stimulated my thinking. 1 2 3 4 5
11. The DL instructor collected enough evidence for valid grading. 1 2 3 4 5
12. My DL instructor has given me instructions as to how to reach him/her outside of class if I need to do so. 1 2 3 4 5
13. The DL course allowed me adequate interaction with **other students**. 1 2 3 4 5
14. There was plenty of opportunity to participate in class. 1 2 3 4 5
15. I feel like my instructor knows me personally. 1 2 3 4 5
16. I can easily ask questions of my DL teacher ***during*** class. 1 2 3 4 5
17. The DL course allowed me adequate interaction with the **instructor**. 1 2 3 4 5
18. I can easily contact the DL teacher if I need to. 1 2 3 4 5
19. The distance learning course has been more difficult than if it had been taught as a regular class at our school. 1 2 3 4 5
20. Assignments and tests are returned in a timely fashion. 1 2 3 4 5
21. DL support personnel should remain in the classroom throughout the class period. 1 2 3 4 5
22. I was provided with assistance and tutoring when I needed it. 1 2 3 4 5
23. Student discipline was not a serious problem in my DL class. 1 2 3 4 5
24. Students were very attentive during the class. 1 2 3 4 5
25. Students put a lot of energy into what they did for this class. 1 2 3 4 5
26. Distractions in the room made it hard to pay attention during class. 1 2 3 4 5
27. The DL class has made me feel well prepared for the end of semester exam. 1 2 3 4 5
28. I have learned as much in the DL course as I would have in a regular course. 1 2 3 4 5
29. The sound quality on the DL system was adequate. 1 2 3 4 5
30. The TV screen was large enough for me to clearly see the information presented by the teacher. 1 2 3 4 5
31. I would enroll in another course taught via compressed video. 1 2 3 4 5
32. I feel my high school should continue to offer courses by compressed video. 1 2 3 4 5
33. I would recommend this course to other high school students. 1 2 3 4 5

For each pair of statements, please circle the number in the position which best describes the distance learning course you participated in this past semester:

34. *THE DISTANCE LEARNING COURSE WAS . . . . .*

Paced too quickly	1	2	3	4	5	6	7	Paced too slowly
Interesting to students	1	2	3	4	5	6	7	Boring to students
Easy	1	2	3	4	5	6	7	Difficult
Worthwhile	1	2	3	4	5	6	7	Not worthwhile

Please circle the appropriate response:

35. The amount of material covered in the distance learning course was:
    a. Too much
    b. About right
    c. Too little

36. Which best describes your performance in the distance learning class relative to your performance in a traditional class:
    a. I performed *worse* in the DL class than I normally would
    b. I performed *better* in the DL class than I normally would *(Skip to #38)*
    c. I performed about the same *(Skip to #38)*

37. If you feel you performed *worse* in the DL class then you normally would, what were the reasons? *(Circle all that apply)*
    a. Didn't study enough
    b. Didn't have time to prepare well
    c. Directions were not clear
    d. Did not like the DL mode of instruction
    e. Couldn't get to talk with the instructor out of class
    f. Little opportunity for questions
    g. Comments on oral or written performance came too late
    h. Didn't get help outside of class
    I. Other: **Specify** _____

38. Why did you enroll in this distance learning course? *(Circle all that apply)*
    a. To take a course that would not have been available otherwise
    b. To be challenged
    c. I was interested in taking a course via compressed video
    d. the course was recommended to me by someone
    e. My parents influenced my decision
    f. Other: **Specify** _____

39. How do your ***parents*** feel about the DL course you have taken?
    a. Very supportive
    b. Somewhat supportive
    c. Neutral
    d. Somewhat unsupportive
    e. Not at all supportive

40. When you felt "lost" or needed help in your distance learning class how often did you go to the following people for assistance?

	Always	Often	Sometimes	Never
a. A teacher at my school	1	2	3	4
b. A supervising teacher involved with DL at my school	1	2	3	4
c. My DL teacher	1	2	3	4
d. A teacher aide	1	2	3	4
e. A school administrator	1	2	3	4
f. My parents	1	2	3	4
g. Someone else: **Specify** _____	1	2	3	4

41. Finally, what did you like best about the course? Least? (Write a brief answer below).

_____

_____

_____

_____

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

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REGION V BOARD OF COOPERATIVE SERVICES
Center for School Improvement
292 E. Pearl Street
P.O. Box 4605
Jackson, Wyoming 83001

Monday, January 26, 1998

ERIC Processing and Reference Facility
ATTN: Christina Rowsome
1100 West Street, 2nd floor
Laurel, MD 20707-3598

Dear Ms. Rowsome:

Enclosed please find two new document submissions from the Center for School Improvement (CSI). I have enclosed two unbound copies of each of the following documents, Wyoming High School Activities Association Statewide Student Activities Survey and The Governor's Pilot Distance Learning Project: The Experiences of Four Wyoming Schools. Last February, we arranged a blanket release between CSI/ Region V Board of Cooperative Educational Services (BOCES) and ERIC. It is my understanding that we can submit these documents under this release.

Thank you for all your assistance in processing these submissions to ERIC. Please contact me if there are any questions or problems with regards to these two documents. The number at CSI is (307) 733-9775.

Sincerely,

Christine Olson

Christine Olson
Center for School Improvement

Business Office:
P.O. Box 240
Jackson, WY 83014

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307-733-9775
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