

CHARACTERISTICS OF HIGH SCHOOL ONLINE EDUCATIONAL PROGRAMS:
A MULTIPLE CASE STUDY

by

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B.S., Kansas State University, 1991
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AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

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Abstract

Technological advances affect the very fabric of our world, from the way we do business to the way we educate children. The National Education Association (2005), predicted that by 2006, most school children would take at least one course online before graduating from high school. The Peak Group estimated that by 2006, one million K-12 students would enroll in online courses (Davis & Niederhauser, 2007). In March, 2006, Michigan passed legislation requiring high school students to have at least one online educational experience to graduate (eSchoolNews, 2006). Online classes open doors to educational opportunities students might not otherwise have due to lack of sufficient student interest in a subject, school budgets, or teacher expertise. The quality of programs, in terms of academic rigor and compliance to state educational standards, varies widely.

Research examining and documenting online education explicitly in K-12 settings has only recently been conducted and published (Blomeyer, 2002) and there is very little of it. This dissertation is a case study of three virtual high school programs, two well established programs and one that is only two years old. I interviewed administrator and teachers and I examined program documents to define what attributes and characteristics indicate a high quality program, what commonalities are found among online high school programs, and what online teachers and programs do to assure a high quality learning experience for students.

Findings include: Extensive descriptions of each program regarding course design, teacher training, program organization and funding, and administration. Common themes across participating programs included concerns related to collaboration, high quality courses – whether vendor provided or faculty written, professional development of online teachers, finding ways to control quality of courses from design to student learning and student satisfaction, and the importance of competent and enthusiastic teachers. Recommendations, based on the findings of this study, are that administrators considering joining an online high school program should look at course catalog, professional development, quality control, teachers, service and support, any additional

benefits from joining the program, and ability to speak with administrators and teachers currently using the program or references.

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Approved by:

Major Professor
Dr. Diane McGrath

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Dedication

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CHAPTER 1 - INTRODUCTION

Online education, once deemed appropriate only for colleges and universities, is quickly becoming a viable prospect for students in K-12, especially in high schools. This study will explore three online high school programs, comparing common aspects, and looking for characteristics that indicate a level of quality of overall instruction and program. This chapter will include an overview of the issues, problem statement, the purpose of the study, research questions, the significance of the study, a brief rationale for using a case study design, definition of terms, and the scope and limitations of the study.

Overview

Recent advances in computer technology are changing the way the world interacts, communicates, and accesses information (Vrasidas, 2002). These technological advances are affecting the way we do business and changing the face of education.

Distance learning has existed for centuries (Greenway & Vanourek, 2006). With distance learning, there is a separation of teacher and learner, and use of some form of media allowing for two-way communication between members of the class (Keegan, 1986). Traditionally, the primary mode for distance learning has been print-based media. With the advancements in technology, Internet-based learning has evolved to rely primarily on instructional technology, including the Internet, as an educational distribution method (Johnson & Aragon, 2003).

Today, the term *online learning* is generally synonymous with the term *Internet-based learning*. A standard definition of online learning, cited by The Sloan Consortium in their 2004 report, is “a course having 80% or more of its content delivered in an online format” (Sloan Consortium, 2004, p. 2).

Distance learning has been used in colleges and universities for approximately 150 years (Greenway & Vanourek, 2006). In 1995, 33% of post-secondary institutions were offering distance courses via the Internet. By the 2000-2001 school term, nearly 90% of all degree-granting institutions offered courses delivered via the internet (National Center for Educational Statistics, 2001).

Internet-based learning in the K-12 educational segment has, until recently, seen a much slower growth but is quickly becoming the fastest growing segment of education offering online courses (Maeroff, 2003). During the 2002-2003 school term, “36 percent of U.S. school districts (5,500 out of 15,040) had students enrolled in distance-education programs, and 38 percent of public high schools offered distance-education courses. A US Department of Education (DOE) study had 328,000 students in 8,200 public schools enrolled in distance-education courses” (Greenway & Vanourek, 2006, p. 35). As of July 2005, according to Learning Point Associates, 21 states had K-12 online learning programs with expected continued double digit growth rates every year (Moser, 2006).

The National Education Association (NEA) estimated that by 2006, a majority of high school students will have participated in an online course prior to graduating from high school (NEA Report, 2005). The North American Council for Online Learning (NACOL) listed 157 unique online learning programs in 42 states in its database, including 32 virtual charter schools, 3 online home-school programs, and 53 public, non-charter virtual schools that offer programs (Greenway & Vanourek, 2006). Utah and Florida have the largest state-run programs, but to-date, the state of Michigan is the most innovative. On March 30, 2006, Michigan lawmakers passed legislation that requires all students entering eighth grade in 2006 to complete an online experience prior to high school graduation (eSchoolNews, 2006; <http://www.michigan.gov/mde/0,1607,7-140-38924-152784--,00.html>).

Statement of the Problem

From virtual charter schools to district-level programs, even national programs, online educational programs are increasing in numbers and scope of students served. While this may open the opportunities for students to gain access to courses they might not otherwise have available to them, most state authorities are paying little attention to this growth in educational alternatives. This is because, for the most part, state policy makers have a misconception that the number of students enrolled in online learning programs is relatively small and therefore it is not necessary to monitor (Watson, et al., 2004). However, as stated earlier, more than 300,000 students are taking courses online (Greenway & Vanourek, 2006). Very few nationally representative studies have been published that examine online educational programs for K-12

students delineating the characteristics that indicate it is of sufficient rigor and challenge to earn the label “high quality”.

As of March 2004, few states had legislation or regulations regarding online learning (Watson et al., 2004). In some states, state policies allow decision making to occur at the district level. Depending on the degree of centralization and the role of the state department of education in overall educational decision making, this lack of regulation has led to fragmented policy formation with regard to online programs. In other states, the state has created an online program that is the only option to students in that state. However, even in states with state-wide programs, ongoing operation often occurs without direct state oversight (Watson et al., 2004).

The quality of online programs varies widely. Entrepreneurial enterprises have observed the growth potential in numbers of online students and see tremendous profit potential in the future. This “frontier of educational experimentation” has a potential multi-billion dollar a year market in the K-12 and post-secondary education markets (Maeroff, 2003). These large sums of money cause concern among critics, especially in this day of educational budget cuts. If more states follow Michigan’s lead, there could be explosive growth in online offerings as states scramble to find providers in order for students to meet similar mandates. Programs that arise only as a result of financial opportunism may not focus on content and, as a consequence, may lack sufficient educational quality or rigor for students and school districts.

Early published reviews regarding the quality of online learning opportunities highlighted perceptions that online learning was not as sufficient as face-to-face instruction. A 2001 Phi Delta Kappan/Gallup Association poll, demonstrated nearly 70% of the public said they disapproved of high school students earning credit through Internet-based courses. Of the 30% of respondents who approved, less than half would agree to allow their own child take most of their courses over the Internet (Clearinghouse of Educational Policy and Management, 2001). Considering the rapid growth of online programs for high school students as well as the potential for legal mandates that could force students to take an online course, quality of program and instruction is an important issue that must be addressed.

The available research on educational quality of online courses primarily addresses post-secondary programs. Research documenting and examining online education explicitly in K-12 settings has just started to see publication dates in the last 3-5 years (Blomeyer, 2002). The lack of educational research directed at online learning in the public school settings makes this type of

study especially important. Some of the available research can be applied to high school programs; however the differences between post-secondary online students and high school-aged online students make some transfer of the research difficult because high school courses must address emotional and social issues as well as educational issues (NEA, 2005). Even as critics cite concerns about the rapid growth of online learning programs for high school aged students, they do acknowledge that this mode of education is here to stay (Zucker & Kozma, 2005).

School administrators, educators, parents, and students have a large pool of online programs to choose from, some of which market directly to students. With little experience in evaluating the characteristics of an online program, the general public is at the mercy of marketing brochures and salespeople for the program. This research is intended to offer all educational stakeholders the resources to allow them to make an informed decision about online educational programming that will best serve the needs of the students by sharing insights gained through the study of some online educational programs and as an online instructor.

Purpose of the Study

This study explored the attributes of online high school programs using a multiple case study design. The study offers a snapshot of three distinct online programs followed by a comparison across the programs to determine what characteristics these programs have in common and contribute to quality of instruction. The study also includes data from teachers of the three programs relating to how they maintain a level of quality to their online teaching.

Research Questions

Three primary research questions and one subquestion will be addressed in this study:

1. What attributes indicate quality of instruction in an online high school program?
 - a. How do online programs assure quality of instruction in the courses they offer?
2. What characteristics do successful online high school programs have in common?
3. What do online teachers do to ensure quality of instruction?

Significance of the Study

A key assumption in this research was that high school students are seeking access to a wider variety of courses available to them that they previously would not have access to in their

home schools. Schools in rural areas have smaller student populations meaning that the demand for certain courses would not justify the hiring of a teacher or the available teachers do not have the expertise to teach the courses desired by the students, such as upper level courses or foreign language courses (Maeroff, 2003). Access to online courses can offer schools the capability to increase course offerings without significantly increasing staffing. For example, Bloomfield High School in northeastern New Mexico has a student population of less than 600 students. Despite losing veteran teachers to retirement, this school was able to offer four different AP classes through the use of online courses (Maeroff, 2003).

Administrators, educators, parents, and students often do not have the time or the expertise to properly evaluate online programs. As expected, sales literature for online programs resonate with glowing reports on the advantages, quality, and rigor of their courses. Because of the potential income for these programs, there is a risk that such claims may exceed a company's actual ability to deliver high quality student outcomes (Maeroff, 2003). But, sorting through the sales hype can be difficult. If students will be expected to pass exams based on their course work, whether in the traditional classroom or a virtual one, educators cannot simply rely on the sales literature to ensure students are receiving the best education possible. This study is intended to break through the hype of sales literature and give educational stakeholders a better indication of what comprises quality distance education programs in order to enable informed decisions about program selection better tailored to the needs of their students.

Rationale for Case Study Design

A case study is a method of qualitative research that examines a single instance or event. Robert Yin describes a case study as an empirical research method that allows investigation of contemporary phenomena in their real-life context (Yin, 1984). In this particular research, a multiple case study design was employed because three online programs participated. Each program studied is presented first as an individual case study. The programs were then compared, looking for common elements that show quality of instruction. This allowed for comparison across different entities engaged in the same activity – education of high school students through courses taught over the Internet.

Definitions

Quality – The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. This should not to be mistaken for "degree of excellence" or "fitness for use" which meets only part of the definition (www.dictionnaire.com).

Internet-based learning – formal education in which a majority of instruction occurs while teacher and learner are separated by time and space. It includes delivery methods such as independent or correspondence study, as well as videoconferencing, Internet, and other instructional technologies (Clark, 2001).

Internet – the worldwide, publicly accessible network of interconnected computer networks. This “network of networks” links smaller networks carrying information and services such as email, chat features, and documents of the World Wide Web (<http://www.wikipedia.com> and <http://www.dictionnaire.com>).

World Wide Web (WWW) – a system of interlinked, hypertext documents that runs over the Internet offering text, graphics, animation, and sound resources through the use of hypertext transfer protocol (<http://www.wikipedia.com> and <http://www.dictionnaire.com>).

Synchronous – occurring at the same time. In a synchronous classroom, students use chat rooms to be online and participating in discussion at the same time

Asynchronous – not at the same time. In an asynchronous classroom, students are not online at the same time and participate in discussion through threaded discussion boards

Online course – an academic course offered in a virtual environment over the Internet in which students and instructor may never meet face-to-face.

Course management system and virtual learning environment – a software system designed to facilitate in the management of educational courses, especially through course administration. Components include: content pages, discussion forums, chat, quizzes and exercises (<http://www.wikipedia.com>).

Virtual high school and virtual school – two descriptions used to represent an educational organization that offers either high school or K-12 courses through Internet or web-based methods (Clark, 2001).

Traditional education – educational opportunities offered in a traditional bricks-and-mortar school with teacher and students meeting in a face-to-face environment.

Charter school – a public school operating independently from a school district, often with a different educational philosophy and curriculum than other schools within the district, created and organized by parents, teachers and other educational stakeholders (<http://www.dictionary.com>).

Nationwide program – an online educational program that enrolls students across state (or international) boundaries. It is not affiliated with a state or school district educational agency.

State-sanctioned, state-level program – in at least 14 states, entities can be identified that have been sanctioned by state government to act as the state’s virtual school (Clark, 2001).

Local education agency-based – a distance education program sponsored by local public schools or school districts mainly to serve as their own supplemental or alternative educational resource (Clark, 2001).

Consortium-based program – a provider of distance education using membership to obtain access to distance education resources.

Teacher quality – teachers should be certified/licensed in the subject matter, learning theory, technologies, and teaching pedagogies appropriate for the content area and online environment (NEA, 2006).

Wiki – a collaborative website whose content can be edited by anyone who has access (<http://www.dictionary.com>).

Blog – short for *weblog* – a shared online journal where people can post entries related to personal issues, hobbies, etc.; usually in chronological order (<http://www.dictionary.com>).

Greenbush Learning Resources – a division of the Southeast Kansas Educational Service Center providing member school districts with digital instructional media for all grade levels (<http://lr.greenbush.org>).

Apex Learning – a private, online course provider (<http://www.apexlearning.com>).

Aventa Learning – a private, online course provider (<http://www.aventallearning.com>).

Digital native – a person who was born into a society with an abundance of technology – cell phones, computers, video games, digital music players, video cameras, Internet, instant messaging etc. Digital natives feel comfortable using technology throughout their every day life activities (Prensky, 2001).

Digital immigrant – a person who was born after the digital revolution, who then becomes fascinated by and adopts many or most aspects of technology (Prensky, 2001).

Scope and Limitations

The scope of this study does not include a comparison to traditional educational experiences or outcomes; rather the study aims to discover characteristics inherent in a high quality online program. These characteristics were compared across three different programs to discover how each program goes about performing similar functions.

This study evaluated three high school online education programs. Virtual High School, Inc. (VHS) of Maynard, Massachusetts, Illinois Virtual High School (IVHS), of Aurora, Illinois, and Lawrence Virtual Secondary Program (LVSP), of Lawrence, Kansas, agreed to participate in the study. VHS is an international consortium-based Internet learning program. IVHS is a state-wide program. LVSP is the secondary program of Lawrence Virtual School in the Lawrence, Kansas school district. VHS and IVHS were chosen because of familiarity, and citations in the literature for the high quality of their programs. The school-district level program was chosen for its relatively local proximity to me and the ability to meet with administrators and teachers directly. It would have been preferable to have another state or national program participate in order to enhance the findings and providing more comparisons, but six other petitioned programs declined the invitation to participate. There was also a time constraint that prohibited studying more than two or three organizations. Another limitation of the study was the inability to obtain advanced placement (AP) scores from the programs in the study, either because they did not offer AP courses or the program didn't have access to the scores. Although AP scores would have offered a student outcome component to the study, the lack of scores, or ability to compare them had no impact on the core study findings.

A final limitation is related to the interview instruments used. There were no previously validated interview instruments available for use known to me. Experience and familiarity with online education, as well as information obtained during the literature review, guided the interview question formation.

CHAPTER 2 - REVIEW OF THE LITERATURE

This chapter reviews the literature related to issues surrounding distance education for high school students. The focus is on literature related to distance education in general; the No Child Left Behind Act and its implications for distance education; professional development for online teaching; an analysis of today's students with respect to online education; and issues relating to quality of instruction.

Distance Education and Evolution to Internet-based Education

This first section in the review of literature is presented in several subsections beginning with a look at the history of distance education and its evolution to Internet-based education. Next the literature is reviewed relative to course types and models. Finally, the impact of Internet-based education, including the advantages and disadvantages, instructional design issues, cognitive theory, and the use of supplemental materials is discussed.

Historical Perspective

Internet-based education appears to be a rather new phenomenon – but in truth, it is based on a centuries old concept, distance education. The rapid evolution of the concept of Internet-based learning in recent years is due to dynamic technological advances. The rapid change of technology is not exactly new, but the nature of changing technology –from the development of a reliable mail system to the development of the Internet – has led to the development and evolution of distance education through the past two centuries.

Starting with the advent of reliable and cheap mail delivery, the first distance education courses became an important part of the education system. Beginning in the 1880's, these courses were known more generally as correspondence courses, home study, or independent study. The courses were available to students, delivered back and forth between the school and the student via mail (Moore & Kearsley, 1996). The first college to offer full degrees via correspondence was The Chautauqua Correspondence College, which was founded in 1881 (Moore & Kearsley, 1996). With the success of correspondence schools in the United States, the

development of correspondence schools in other countries followed closely on the heels of development of reliable mail delivery systems.

The first instance of a high school using distance education occurred in 1922 in Benton Harbor, Michigan. The principal, S.C. Mitchell, stated that the curriculum in this school was too heavily weighted toward college-preparatory courses for its primarily working class community. With the help of The American School in Chicago, a well-respected distance learning program, this principal enrolled a group of vocationally oriented, non-college preparatory students in what became known as “supervised correspondence study,” an idea which quickly spread throughout the United States (Moore & Kearsley, 1996, p.28). In 1928, the University of Nebraska adopted supervised correspondence study as the basis for forming an experimental high school (Moore & Kearsley, 1996).

From correspondence courses distributed via the mail system, the next step in distance education came as a result of broadcasting. The first educational radio license issued by the federal government went to the Latter Day Saints’ University of Salt Lake City in 1921. In February of 1925, the State University of Iowa began offering courses over the radio (Moore & Kearsley, 1996). Radio, however, did not live up to expectations as an educational distribution medium. Some reasons radio did not live up to its promise include the amateurism of the broadcasts, a lack of commitment from broadcasters due to the inability to include advertising in the broadcasts, its one-way communication, and the overall unenthusiastic interest of faculty and administrators (Moore & Kearsley, 1996).

On the other hand, television was much more successful. As early as 1934, the State University of Iowa began offering college courses via television broadcasts (Moore & Kearsley, 1996). Television distribution expanded after World War II. Televised educational distribution received donations from the Ford Foundation, helping spur widespread use (Moore & Kearsley, 1996). The literature is not specific as to the reasoning for the success of television over radio, but we may speculate that perhaps television was a more successful method due to the eventual development of teleconferencing capability which offered the ability to use two-way interaction, or the fact that students could see and hear the instruction presented on the television.

The Articulated Instructional Media Project (AIM) and the Open University (OU) approach emerged in the late 1960’s and early 1970’s. The AIM project was funded by the Carnegie Corporation in an attempt to “join various communication technologies, with the aim of

delivering high-quality and low-cost teaching to off-campus students” (Moore & Kearsley, 1996, p 33). This project proffered a new “systems” approach because in addition to providing the content, the program provided “student support and counseling, discussions in local study groups, and the use of university laboratories during vacation periods” (Moore & Kearsley, 1996, p 33). Through the use of all known forms of distance educational delivery methods, presenting content in a variety of ways allowed students to use the methods that best fit their learning styles (Moore & Kearsley, 1996). The AIM approach was the first time the idea of distance education was used as a total educational system. (Moore & Kearsley, 1996)

In 1967, the British government started the process of planning and implementing a new educational system. This system became known as the Open University (OU) approach and started with the idea of using radio and television to allow open access to higher education to the adult population (Moore & Kearsley, 1996). It was built resembling the AIM project. The first Open University opened in London in 1969 (Moore & Kearsley, 1996). The OU approach became the premier national distance education university. This approach was so successful that nearly every industrialized nation, except the United States, has one (Moore & Kearsley, 1996). Several reasons exist for why the OU approach did not work in the United States. One reason is that the political motive to remove barriers to higher education did not exist in the United States. Where Open University systems in other countries enjoy economies of scale (greater than 100,000 enrollments), the United States was unable to achieve this scale and support due to the lobbying efforts of the current higher education system (Moore & Kearsley, 1996). Currently, each state controls its own educational system – both K-12 and post-secondary. Because each state has its own educational system, developing a national education policy was nearly impossible to achieve (Moore & Kearsley, 1996).

The focus of most of this historical information has been on educational institutions. It should be noted that other groups have used distance learning as well. Home study groups and the military have accounted for a large number of distance education learners in the past 20-25 years. In addition to these groups, business and industry have also used distance learning techniques for training (Moore & Kearsley, 1996).

The next evolution of distance learning derived from advances in teleconferencing technology. Through the use of teleconferencing, distance education moved from being a solo venture to one that was designed for group use (Moore & Kearsley, 1996). Teleconferencing

differed from television or radio transmission of education because it allowed for two-way exchange between groups. Teleconferencing has evolved from being audio only to the use of satellites and two-way video. In 1987, the Star School Program Assistance Act was passed by Congress. This law was designed to promote the use of telecommunications for instruction in math, science, and foreign language at the K-12 level (Moore & Kearsley, 1996).

The current leap in evolution of distance education is a direct result of the exploding use of the World Wide Web, or the Internet. In 1969, the Department of Defense (DOD) set up a network to foster communication between the military, universities, and defense contractors. In the 1983, the National Science Foundation (NSF) set up a computer network, known as NSFnet that would later connect universities and research organizations, and eventually commercial interests (<http://www.wikipedia.org>). In 1993, the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign released Mosaic 1.0, one of the first generally popular browsers. By late 1994, there was growing public interest in the ability to access these databases and by 1996, the Internet was a common household word (<http://www.wikipedia.org>). By 1999, 88% of higher education institutions had plans to use the Internet to offer distance-based courses versus recorded video or two-way video teleconferencing (Johnson & Aragon, 2003).

The first online public school began in 1995 with the CyberSchool Project in Eugene, Oregon. This program was started by nine teachers to offer supplemental high school classes. By 1996, there were three online schools: the WebSchool in Orange County, Florida; The Cyber-School Academy, started by the Federal Way School District in the state of Washington; and the Concord Virtual High School (later renamed as Virtual High School) based in Maynard, Massachusetts. During this time period, the University of Nebraska-Lincoln was given grants to research and develop Internet-based high school courses (Greenway & Vanourek, 2006).

From 1996 to 2002, a dozen state departments of education created statewide virtual high school services (Zucker & Kozma, 2003). During 2002-2003, 36 percent of US school districts had students enrolled in distance education programs. As of November 2005, the North American Council for Online Learning (NACOL) listed 157 online learning programs in 42 states (Greenway & Vanourek, 2006). Distance education in the K-12 setting is expected to continue growing at double digit rates (Maeroff, 2003).

Computer-based Educational Systems

Computer-based education systems emerged during the late 1960s and early 1970s. These systems were created prior to the advent of the Internet and were generally networked on a single campus. One of the first was PLATO, started at the Urbana campus of the University of Illinois (Woolley, 1994). Using computers in teaching was the impetus for the development of this system. PLATO started as a small computer network with only a single classroom of terminals (Woolley, 1994). Technological advances made through the development of the microcomputer eventually allowed PLATO to grow to a system handling more than a thousand users at once (Woolley, 1994).

PLATO was considered to be ahead of its time (Woolley, 1994). Its features included a chat function and the ability for users to write programs for the system. Users communicated with each other and reported bugs and possible fixes to the program developers through the system. Because of its structure, PLATO became popular in the development of gaming programs, often written by unpaid programmers whose only gain was the recognition that they had written a popular game program (Woolley, 1994). Coupled with the fact that microcomputers were becoming much more cost-effective than single use terminals, and financial difficulties faced by Control Data, the owner of the PLATO system, the system shut down in the early 1980s (Woolley, 1994).

After the demise of PLATO, and based upon the successes of PLATO, research-based computer-aided instruction (CAI) lessons and computer-managed instructional systems developed. CAI used a game-like entertainment system to present drill-and-practice tutorials (Moursund, 2001). Schools began investing in PC computer labs, using the labs as a supplemental instructional method to enhance academic achievement in certain subject areas like math and reading (Christmann, Badgett & Lucking, 1997).

Integrated learning systems (ILS) were another outcome from the success of the PLATO system. ILS programs were stand-alone educational programs that allowed a student to work at their own pace through a series of lessons, obtain individual attention from a teacher, and were in a small classroom environment (Ray-Overstreet & DeVane, 1995). When ILS systems were used with at-risk students, the students were more likely to complete course work and improve their skills and abilities (Ray-Overstreet & DeVane, 1995). Unlike traditional CAI programs which were used to enhance classroom instruction, ILS systems presented stand-alone instruction

and lessons and allowed for tailoring of the content to fit the student’s current learning level (Jones, 1994).

Distance Education Types

Internet-based learning is generally defined in the literature as a formal education program characterized by separation of teacher and student(s), either by geography or by time, using technology as a means of presenting context and communication (Schrum, 2002; Allen & Seaman, 2004; Maeroff, 2003; Rice, 2006). For the purposes of this study, the programs studied are institutionally based meaning they have a central agency that administers the program. Rice (2006) identifies five types of K-12 Internet-based learning programs which are described briefly in the table below. In addition to Rice’s list, I have added nationwide programs and university-affiliated programs.

Table 2-1 Types of K-12 Internet-based learning programs

Type	Description
Nationwide programs	Students take individual courses but may or may not be enrolled in a physical school. Students and instructors in the courses may be separated by geography. Students receive credit from either their physical school or other credit-granting agency. Program may be administered as either for-profit or non-profit.
University-affiliated programs	Students take individual courses administered through a college or university. Generally students are enrolled in high schools in the same state as the university administering the program.
Statewide supplemental programs	Students take individual courses but are enrolled in a physical school or cyber school within the state. These programs are authorized by the state and overseen by state.
District level supplemental programs	These programs are typically operated by autonomous school districts and typically not tracked by state agencies.
Single district cyber schools	These programs provide an alternative to the traditional face-to-face school environment. They are offered by individual districts for students within that district.
Multi-district cyber schools	These programs are operated within individual school districts but may enroll students from other school districts within the state. This type program represents the largest growth sector in K-12 online learning.
Cyber charters	These programs are chartered within a single district but can draw students from across the state. In many cases they are connected in some way to commercial curriculum providers.

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There are two distinguishing characteristics that define the above types of programs: whether the online program enrolls students and grants credit and diplomas directly, and the jurisdictional level of the program (such as state or district) (Watson, et al., 2004). Operational

issues of online programs, including issues of funding and teacher supervision, are affected by how they are defined.

The ways in which online high school programs were developed varies greatly. Some programs were started by legislation, others by for-profit or non-profit organizations, and others by regional educational service agencies or cooperatives. Due to the range of processes for starting and operating online high school programs, the degree of oversight of these programs varies as widely as their development. In 2003, the distance education market was considered to be a \$700 million a year industry (Maeroff, 2003). With minimal oversight by state or federal educational agencies, and double digit projected growth in the near term, the door is open for many new programs to emerge. To date, the educational community lacks an accepted industry standard for online courses and programs, but several agencies are working on it. One organization, “Quality Matters” is currently working to ensure online programs maintain minimum standards of quality. They have published standards for post-secondary online courses and have just begun (in 2006) to look at high school online courses (<http://www.qualitymatters.org>).

Internet-based Learning Models

There are several different models for Internet-based learning. These models include courses that are completely online, courses that use video conferencing, or courses that are hybrid models integrating both face-to-face and distance components.

Completely online courses are courses that present the course content entirely in an online form. The *synchronous* class format uses an online chat room where all students (or groups of students) are required to be present for discussions, which occur in real-time. *Asynchronous* discussions allow students to make postings to the discussion thread when they are online, not necessarily when other students might be online as well. Students read each other’s postings and return comments back and forth in order to further understanding of the larger group (Maeroff, 2003).

Another model for distance delivery includes the use of telecommunications systems. Using systems such as Polycom, Tandberg, CUseeME, and NetMeeting, classes are able to collaborate over distance and see other students in a real-time setting. These systems allow the incorporation of audio, video, chat, and whiteboards for multiple classes over great distances to

work together on projects and presentations. The one problem with this type of model is that it requires a large bandwidth, which can get expensive. Once established, however, the possibilities of such a system are unlimited (Schrum, 2002).

A third model for distance delivery is a hybrid model. This model incorporates the use of either synchronous or asynchronous discussion in addition to face-to-face class meetings. Because some students may feel isolated in a cyberclassroom, this model allows students who are new to Internet-based learning to continue to see that the course works similarly to any other course and, in some cases, allows them to make an easier transition to wholly online classes.

For the purpose of this research, programs considered completely online courses were studied. These programs generally used textbooks or some form of printed course materials for presentation of content with asynchronous classroom discussions and activities.

Issues Affecting Internet-based Learning

Most of the available research regarding issues related to the impact of Internet-based courses on learning has been obtained at the post-secondary level. However, not all of this research can be applied to the K-12 learning environment in the same manner as at the post-secondary level. This section will examine some of those issues, which include: advantages and disadvantages of online learning, instructional design issues of courses, creating a community of learners and changing roles in the classroom, cognitive theory and instructional design, and the use of supplementary materials.

Advantages of Internet-based learning

One of the primary advantages of Internet-based learning is that it increases a school's access to curricular offerings that might not otherwise be available to students (Gagne & Shepherd, 2001; Donlevy, 2003). This could be of significant benefit to high schools that are otherwise unable to offer a wide range of courses due to lack of teacher expertise or insufficient student interest to make it feasible for schools to offer specific courses. This is especially true for the more challenging upper-level classes, in, for example, a college-preparatory curriculum (Maeroff, 2003; Spodick, 1996). By using Internet-based learning options, schools can increase the number and depth of courses offered to their students without increasing the size of teaching staff or size of the building. Some of the literature even claims that teachers who teach online are better educated and have more experience than teachers in the traditional classroom, many

having master's degrees or higher (Roblyer & Elbaum, 2000). Empirical evidence regarding this issue was obtained during the course of this research and will be mentioned in the individual case descriptions, but this claim was not specifically studied in this research.

Another advantage of Internet-based learning is that it appears to facilitate a greater amount of individual student and teacher interaction (Meyer, 2003). According to Meyer (2003), evidence shows the asynchronous mode of instruction increases interaction, self discipline, sense of community, improved communications skills, reflection, and a shared sense of space among students and teachers. Course participants who are able to create a community through interaction in the course achieve greater confidence, are able to learn from others, and feel connected and accepted (Meyer, 2003).

In the asynchronous environment, students cannot see each other physically, and this leads to a sense of anonymity. Students who might be shy in a traditional classroom are able to express themselves and contribute more in the online environment (Kindred, 2003). In traditional classrooms, those students who can think quickly and are very vocal are often the students whose thoughts and ideas are heard. In the asynchronous classroom, there is no such fight for "floor time" and students who are more reflective thinkers can read and reflect upon their contribution to the discussion before making their voice heard in the discussion board (Berman & Tinker, 1997). Asynchronous discussions allow students to read, research, and reflect upon their responses, contributing to the richness of discussion and open debate of concepts.

The ability to improve communication in general is an advantage of Internet-based learning. Students are able to communicate with each other, with the teacher, and even with experts in the subject matter, bringing that information to the discussion boards to share. Due to the textual nature of Internet-based learning, the role of the teacher changes from presenter of knowledge, to reviewing what the students already know and building upon that knowledge to increase understanding of the concepts (Twigg, 2003). The teacher can see the thought processes of the students through their written words and can very quickly offer feedback and redirection. Through the use of Socratic questioning techniques, students are encouraged to think more deeply about the subject rather than just scratch the surface of understanding. Within well-written curricula, this feedback loop becomes an integral part of the learning process and increases and reinforces the scaffolding and construction of knowledge (Twigg, 2003). In the

online environment, the teacher is not seen as the final authority in a discussion and becomes more like a participant in the class (Palloff & Pratt, 1999).

Increased collaboration can be accomplished in the online classroom which affords students an increased ability to communicate with all members of the class, including the instructor. Online classrooms offer the ability to explore the materials beyond the text by searching out more information to meet students' interests (Kindred, 2003). Students are easily able to work on projects and get feedback from other members of the class, as well as from the instructor. Distance educational models often purposefully create situations that actively involve the students in the course through the use of interactive projects that require collaboration and engagement (Berman & Tinker, 1997). These projects and simulations are used to engage and stimulate students encouraging them to assume more responsibility for their own learning.

The ability to explore the subject matter in their own way to suit their learning styles is affords a key advantage for students regardless of abilities. For example, students with disabilities can benefit from Internet-based learning because these students are free to explore the subject matter in a way that best suits them, rather than how the instructor presents the material (Maeroff, 2003). On the Internet, "nobody knows you're a kid" (Brown, 2000). This anonymity allows students to make contact with experts in the field without fear of not being taken seriously because of what they look like or their age. It helps to broaden the understanding of general concepts because the students can search out their own information to help them understand and apply the concepts.

Perhaps one of the most unique advantages of Internet-based learning is that it can be done anywhere and at any time. Traditional classes are generally held between 8 a.m. and 3 p.m., on average. In the virtual classroom, class, literally, never ends. Students can access the course at any time of day or night because the Internet never turns out the lights and shuts the doors – always available unless, of course, the server is down. Some Internet-based learning programs operate in countries around the world. Even when students or teachers are on vacation, they can always check in on the class and see how things are going (Berman & Tinker, 1997; Roblyer & Elbaum, 2000; Maeroff, 2003). It is this aspect that drew this researcher to the prospect of teaching online.

The Web-based learning environment provides opportunities for students to develop what one researcher referred to as "generic skills" (Oliver & McLoughlin, 2001). Generic skills are

those skills that extend beyond the skills and knowledge in specific subject areas (Oliver & McLoughlin, 2001). Oliver and McLoughlin (2001) list the following as key competencies resulting from technology use: collecting, analyzing, and organizing information; expressing ideas and information; planning and organizing activities; collaboration with individuals and as part of teams; the ability to use mathematical ideas and techniques; and problem-solving. Learning to use technology is part of the core competencies included in literature by Oliver and McLoughlin as well as Roblyer and Elbaum (2000), Berman and Tinker (1997), and Donlevy (2003).

Disadvantages of Internet-based learning

There are some disadvantages to Internet-based learning that should not be ignored. One disadvantage is the lack of physical contact. For some, this lack of contact can diminish the effectiveness of the educational experience (Donlevy, 2003). This could be partially due to the fact that much of the educational process takes place in a social setting (Bransford, Brown & Cocking, 2000). Due to the nature of Internet-based learning, the lack of physical contact with students means that the teacher may be unable to realize when students are having difficulty and this could lead to students dropping out of the experience (Berge & Clark, 2005). The separation of teacher and student also causes difficulty with the process of making meaning of words and sentences as this is aided through the use of visual cues which are absent in the Internet-based learning classroom (White & Weight, 2000). To minimize this feeling of isolation, it is up to the writer of the curriculum to ensure that a sense of community is built into the curriculum to maintain a social structure to the “classroom”. This aspect will be discussed further in the instructional design subsection.

Another disadvantage is related to the textual nature of Internet-based learning. Although this is also one of the advantages in that it teaches communication skills and allows the visualization of thought processes, students with low reading abilities, or disabilities such as dyslexia, may find it difficult to keep up with the massive reading requirement of Internet-based learning (Zucker & Kozma, 2003). This can be diminished somewhat with the use of multimedia in the presentation of the material, however increasing multimedia can cause problems for students who do not have the bandwidth to effectively view multimedia presentations, such as students from outside the United States or those who use dial-up Internet services.

Access issues in general present a disadvantage to Internet-based learning. Access issues include factors such as whether or not students have computers and Internet access in the home and the Internet speed available. Problems inherent in general Internet access such as server outages and weather conditions that interfere with Internet access also complicate Internet-based learning.

In 2000, computers were in the homes of 77% of white non-Hispanics, 72% of Asian Americans, 43% of African Americans, and 37% of Hispanics (Maeroff, 2003). Further, there is a direct correlation between household incomes and computers in the home. Consider that 87% of households with incomes of greater than \$75,000 had computers in the home, 79% with Internet access versus only 28% of Americans with an average income below \$25,000 had computers in the home and only 19% of those who had computers in the home had Internet access (Maeroff, 2003). It is difficult to access online learning and take advantage of its potential if the student lacks a computer or Internet access in the home.

By 2003, 87% of white non-Hispanics, 84% of Asian Americans, 54% of African Americans, and 55% of Hispanic Americans had access to computers at home. By 2003, 96% of homes with incomes of greater than \$75,000 had computers in the home while 47% of those making less than \$25,000 had computers in the home (childtrendsdatbank.org). No information was available regarding household income and Internet access in this report.

A critical disadvantage of Internet-based learning is that high school students may not have the self-management skills necessary to direct their own learning. Recent statistics show that only 68 of 100 ninth-graders graduate from high school with their class. Of these, 40 enroll immediately in colleges and universities, with only 27 making it through their second year of post-secondary education (McCarthy & Kuh, 2006). Of those students who pursue post-secondary educational opportunities, three-fifths of two-year college students and one-fourth of four-year college students require one or more years of remedial classwork (McCarthy & Kuh, 2006).

Internet-based learning requires students to be self-motivated and responsible for their own learning if they are to succeed (Roblyer & Marshall, 2002; Clark & Berge, 2005; McCarthy & Kuh, 2006). The role of the teacher changes in an online course to one that is much more collaborative. Some students have difficulty making that basic adjustment in their own learning process because they have not developed the study skills necessary to take on a more active role

in their own learning (Clark & Berge, 2005; McCarthy & Kuh, 2006). Screening instruments, such as the Educational Success Prediction Instrument (ESPRI), are used by some virtual programs to screen potential online students (Roblyer & Marshall, 2002), however this does not occur universally. Screening tests aid in identifying students who have the skills necessary to direct their learning as well as provide a basis for counseling and support services for students interested in taking online classes (Roblyer & Marshall, 2002). However, these screening instruments could also exclude students who might be very successful in the Internet-based classroom.

Accreditation issues are also of concern. With the profit potential offered by double-digit growth rates, the potential for proliferation of substandard programs will be of ongoing concern (Maeroff, 2003; Clark & Berge, 2005). In most cases, the school recognizes the distance program and gives academic credit because a teacher in the school is involved in the teaching of the students. If programs are able to market directly to students without any type of screening process, however, the potential for substandard programs increases (Clark & Berge, 2005).

Finally, teachers are often not given the professional development necessary to offer high quality learning experiences via Internet-based learning. Significant training time is necessary for proper faculty development (Donlevy, 2003). Distance education, specifically Internet-based learning, has the stigma of being substandard to traditional educational experiences. Effective teaching techniques for the online classroom are different from the traditional classroom, so simply hosting the information on the Internet and labeling it as distance education without proper teacher preparation will not improve its stature in the eyes of administrators and parents. More discussion of professional development will occur later in this chapter.

Instructional design

Instructional design is the “systematic process of translating general principles of learning and instruction into plans for instructional materials and learning” (<http://www.coe.uh.edu/courses/cuin6373/whatisid.html>). In other words, instructional design is how educational materials and activities are presented in an attempt to best meet the needs of the learners. The quality and effectiveness of Internet-based learning are directly related to the instructional design employed in the presentation of the content. Several issues related to instructional design will be addressed in this section including: building a community of learners

and the changing roles of teacher and student, cognitive issues related to the display of information in the course, and the supplementary materials used in courses.

Creating a community of learners and the changing roles in the classroom

In the traditional classroom, the creation of an educational community is relatively easy to do. Students see and hear each other, as well as the teacher, because they are all located in the same place. They easily communicate back and forth. Students and teachers know the boundaries of the classroom and what roles each group takes on in the academic setting. In the online environment, however, students would scarcely know their classmates if they were to pass them on the street. Teachers could be standing next to their students in the grocery store and both would be totally unaware. Therefore, creating a community in cyberspace presents a new and unique challenge to even the most experienced teacher.

Building a community of learners in the online environment is not something that can be produced as an accidental byproduct of belonging. The design of the course, from the interface to the instruction and communication, must be carefully orchestrated and deliberately planned in order to allow students to feel they are part of a group and not just an isolated person stuck out in cyberspace, reading lectures and making notes on an electronic bulletin board (Palloff & Pratt, 1999). The Internet is as much about person-to-person connections as it is about information (Revenaugh, 2000). Students must feel they are part of a larger group to increase the effectiveness of the course and reduce the dropout rate (Twigg, 2003). Connections made in an online class are unique (Wood, 2005) limited only by time and access rather than by distance and social class (Palloff & Pratt, 1999).

To be effective, the online instructor must have both content knowledge and good communications skills to more effectively build the community of learners (Palloff & Pratt, 1999). Care must be taken during the development of the course to give deliberate attention to the development of interpersonal skills and interactions between teacher and students as well as among the students themselves (Palloff & Pratt, 1999). The better the teacher is at communicating the content through the written word, as well as maintaining the social and emotional aspects of the traditional classroom, the more successful the learning process (White, 2000).

The roles of the teacher and student are very different in an online classroom. The online teacher has the potential to build unique personal relationships with students without ever

physically meeting (Perreault, , 2002). It is the responsibility of the teacher to create opportunities for interaction with the students. These opportunities must be planned during the curriculum writing phase of course development. Therefore communication between teacher and students occurs on a much more personal level.

Since it is necessary for students in an online course to be more responsible for their own learning, the teacher must give up authoritarian control of the class and become more of a facilitator. Instead of always giving answers to questions, the online teacher must use a more Socratic teaching style. By asking pertinent questions, students can be stimulated to do more research to be able to respond to the questions. Through this process, the teacher becomes a member of the community of learners, rather than the final source on the subject area. This change in roles also allows for students to see the teacher as more approachable and less intimidating because they are seen more as a participating member of the learning community. Not only will this help overcome the impersonal nature of the online environment, it promotes student-student communication as well as enhances the student-teacher relationship (Kemp, 2000).

For learning to take place in the online environment, all members of the learning community must participate. The greater the participation, the more cohesive the group becomes and the more successful the learning (Palloff & Pratt, 1999). The asynchronous learning environment allows the students to participate when they are ready rather than trying to participate in a discussion in the heat of the moment as in a traditional classroom.

Social and cognitive learning theory and instructional design

Internet-based learning presents many challenges for K-12 learners and teachers. Instruction for the K-12 learner needs to address both the emotional and social aspects of learning as well as the academic content. Students use their own modes of cognitive processing to acquire, retain, and retrieve information which implies that acquisition and performance depend on how the learner manipulates the subject matter/content (Blanton, 1998). In the traditional classroom, instructional designers tend to rely on the fact that there is a teacher and student peers present to make adaptations and support the learning environment. Students who have difficulty understanding have the immediate feedback from others in the classroom to test and compare their knowledge (Morrison & Anglin, 2005). In the Internet-based learning environment, the lack of an immediately available instructor or student peers may so frustrate

students that they stop studying or develop a misunderstanding of the concept being studied. Internet-based learning providers for K-12 learners must recognize social learning theory and its contribution to cognitive function and long-term learning.

Addressing the social and emotional needs of students fosters skills needed for life-long learning as well as helping students become better learners (Kress, Norris, Schoenholz, Elias, & Seigle, 2004). In Internet-based learning, this requires the instructional designer to include activities that foster a high level of interaction between students (deVries, 1996) and student-teacher interactions that will foster this scaffolding behavior. Because Internet-based courses can be seen as impersonal and isolating to students (Twigg, 2003), incorporating the social aspect of the classroom is essential to student success (Wentzel & Watkins, 2003).

Cognitive load theory (CLT) has become an important theory in learning and instruction (van Merriënboer & Ayres, 2005). The primary assumption of CLT is that the working memory has a limited capacity when dealing with new information (van Merriënboer & Ayres, 2005). This working memory can hold about seven chunks of information when simply holding the information or two or three chunks of information when processing the information (van Gog, Ericsson, Rikers, & Paas, 2005; Brunken, et al. , 2003, Grace-Martin, 2001). By processing the information into schemata, learners organize and store knowledge in long-term memory. Schema theory says that working memory can handle and process more information if relevant background knowledge is activated during the processing of information and formation of schemas (Blanton, 1998). This organizing process allows the working memory to process larger cognitive loads.

Cognitive competencies and capacities are much lower for K-12 learners than for adult learners (Musgrove & Musgrove, 2004). The adult learner has had more experience and long term memory holds schemas that are more tightly organized (van Merriënboer & Ayres, 2005). As schemata are repeatedly tested and students are successful, the schemata become automated. When thought processes become automated, less cognitive effort is required to enable them.

An understanding of the interactions between cognitive load and instructional design contributes to such issues as whether to use printed materials, how to adapt existing resources, and how to best use the technology (Picciano, 2001). The goal of instruction in any setting is to optimize the cognitive load of the student without causing cognitive overload. Delivering courses via the Web requires careful consideration of how the Web page is designed, including

readability, navigation, and user-friendliness (Martindale & Ahern, 2001). Content to be learned must be presented in ways that challenge the student in a positive manner to facilitate comprehension of the subject matter without overloading cognitive function. Because the same learning material can bring about different amounts of cognitive load in different students in the same class, balancing the cognitive load becomes the challenge of the course designer (Grace-Martin, 2001). The instructional designer must remember that the design of the instruction must be related to the operational objectives and age-appropriate teaching practices than about the technology being used (Blanton, 1998).

Constructivism and instructional design

In the previous section, I talked about the social aspects of learning. In this section, I would like to tie the social aspects of learning with constructivism and argue the need for instructional designers to take constructivism into account when creating and arranging content for the high school Internet-based classroom.

Mayer (1996) offers three metaphors for learning, *rote learning*, *meaningful learning*, and *knowledge construction*. Rote learning occurs when the student simply memorizes information but is unable to use that information in any situation other than regurgitate it back in a testing situation. Processing information allows students begin the process of making learning meaningful. Meaningful learning is represented by the ability to recall important facts and content and transfer that knowledge to new learning situations (Mayer, 1996, 2002). Knowledge construction, according to Mayer (1996), occurs when students begin to make sense of the information. Students then begin to use that knowledge to construct new knowledge. All this activity occurs in the social atmosphere of the classroom.

Students actively build their own knowledge by using the things they have available to them (Papert, 1993). One of those things is culture which provides unique experiences and ways of looking at things, which ultimately affects learning. The culture and activity in which knowledge is developed and used cannot be separated from the learning and the construction of knowledge; it is an integral part of what is learned (Brown, Collins, & Duguid, 1989). Bruner's (1996) *constructivism tenet* states that the reality which we all see is one that has been constructed by us. Our reality is constructed based on our traditions and, what he refers to as *culture's toolkit*. It is an educator's job to aid students in learning to use this toolkit in meaning making and reality construction to adapt to the world we live in (Bruner, 1996).

Bruner's (1996) *interactional tenet* adds that in addition to our cultural experiences, interactions with others aids in the meaning making and learning. Learning is meaningful when students are able to recall the information and apply it to new situations. If there is an inability to separate the social and cultural experiences from learning, teachers and instructional designers need to be able to incorporate those aspects into the educational experience of students in the online classroom. This also follows the *perspectival tenet*, that everyone has a frame of reference for all learning. That frame of reference comes from the way learning is constructed or experienced (Bruner, 1996). These three aspects indicate that learning, although occurring in a social and cultural setting, is unique to each student in the classroom. Unless knowledge is processed by the individual and related to experience, it will not be meaningful and learning will become rote and of little use beyond the test (Vrasidas, 2000). Knowledge and meaning making, then, are personal, drawn from experiences and actively constructed in the mind of the learner (Kumar, 2006; Blocher et.al., 2003)

The creation of meaningful learning is the basis of constructivism. Students learn the content pieces in social situations where they can test their newfound knowledge and iron out misconceptions with teachers and peers. Constructivist teaching places emphasis on the interactions with the environment and peers so that integration of new learning into existing frameworks can be carried out (Cheung, 2006). This allows the input to be encoded in a context that the student can understand. Once the content has been formulated into a well-developed idea or category, the information can be managed by the learner (Bruner, 1996). Because these interactions are experienced on an individual basis, they provide a unique framework for understanding. Complex learning involves the reformulation of data, adapting new experiences to the prior information the student possesses. This helps in reducing the complexities of the learning to something that can be managed and allows for new schemata to be developed within the experiences (Bruner, 1996). The data can later be placed into a larger schema and organized in the long term memory. This ultimately leads to autonomous thinking and application of learning.

If students are going to be able to think autonomously and use the knowledge they have created, there has to be opportunity to practice managing their own learning. Because many students have little experience with this, it is up to the instructional designer to integrate activities slowly into the course so students, through scaffolding and experience, become more

comfortable and proficient in managing their own learning. Through the use of reflective activities, such as journaling or discussions, learners can become more active in their meaning-making. This fits the idea of a constructivist learning environment because it allows students to begin to autonomously construct meanings based on prior knowledge and educational experience at both the social and individual levels through the reflective learning activities (Kumar, 2006; Astleitner, 2005). Through the reflective process students begin the practice of knowledge construction, allowing students to expand and link new learning to what is already in their memory. It also allows for scaffolding of learning as students reflect on what they have learned and begin to construct their own knowledge for future use and application to new and novel problems (Perkins, 1991).

Good teaching, whether in the online or traditional classroom, involves the use of multiple instructional methods because not all students learn the same way, nor do they all come to the classroom with the same culture and experiences. Using varied instructional techniques, methods, and activities, knowledge is activated and individual student strengths are supported so that student success is achieved and encouraged (Astleitner, 2005). The Internet-based classroom allows students to use their own learning styles and the teachers are better able to individualize instruction to aid students in constructing their own knowledge. The constructivist teacher can facilitate higher order thinking through the use of questioning strategies that encourage students to apply and test their new knowledge and abilities. All learning involves the acquisition of knowledge. Transfer of learning to solve new problems, answer new questions, or facilitate new learning is the premise of Mayer's (1996, 2002) third metaphor.

As a practitioner of the constructivist and social learning perspective, I have worked to create such an environment in my own online classroom. The students work together through the discussion boards to share their knowledge and help make sense of the activities. By allowing the discussions to develop through the discussion boards and using Socratic questioning strategies, students begin to think more deeply about the concepts and reflect upon the information. The students then bring that information back to the discussion boards allowing everyone to benefit and integrating the information obtained into their own schemata and, eventually, schema. Using feedback loops allows for individualization of the instruction and further scaffold the learning in the Internet-based classroom.

Use of supplementary materials

The final issue to be discussed in this section is related to instructional design and the materials used to present information. Students in an online class are somewhat dependent on the way information is presented in the online course and supplementary materials (Picciano, 2001). Resources used in a traditional classroom cannot simply be “dumped” into the online environment with the same effectiveness. In the classroom, the limitation of the materials is not an important factor because the teacher is there to enhance the information by answering questions and using available classroom equipment and resources to ensure understanding. In the online classroom, nearly any material a teacher thinks is important and useful to students can be posted on the Web and used to enhance the learning, limited only by copyright (Gillette, 2001). Because the course is online, students also have the option to search out their own resources. Because today’s high school students often lack the academic skills and prerequisite knowledge that allows them to direct more of their own learning, they may rely too heavily on the information presented in the online classroom.

Much of the meaning of language is understood through body language and the social context of the setting. The online class is devoid of visual cues that help aid in understanding (White & Weight, 2000). This is why communication and interaction between the students and each other, and students and the teacher is important in the online classroom. All text-based materials used must be converted, clarified, and presented in such a way that will be clear to the learner (Picciano, 2001; Palloff & Pratt, 1999; White & Weight, 2000; Twigg, 2003). Using the features of the learning management system, such as the discussion boards and chat rooms, to enhance the relationships between the students and students and teacher will aid in the understanding of the materials used in the Internet-based class.

Online Learning Programs

One of the appeals of online learning is the ability to expand curricular offerings to all students. Higher education has a longer track record with Internet-based learning having a different set of purposes, administrative practices, and audiences than K-12 settings (NEA, 2006). With the increase in number of K-12 programs and students accessing online courses, it has been found that new educational delivery modes require new quality criteria (NEA, 2006). Current educational standards never considered that there would be any other way to educate K-12 learners than the traditional classroom model. In this section, I will discuss governance and

funding of online programs, curriculum offered and course development, distance enrollment, teacher certification/licensure, and course management systems.

Governance and Funding

Online programs are undertaken for a number of reasons. School districts undertake them to provide supplemental educational opportunities, credit recovery, or alternative educational opportunities; states undertake programs to offer supplemental educational opportunities throughout the state (Watson et al, 2004). Some K-12 programs were created by legislation, however most were not (Watson et al., 2004).

As for funding, most K-12 programs were initially funded through government grants, either from a state department of education or the federal government. Some programs charge individual students fees for participation, others charge a school membership fee. Fees range from \$75 to \$300 per student per course (Watson et al., 2004; Clark, 2001).

Curriculum Offered

Courses offered through online venues vary greatly. Some programs offer only credit-recovery programs. These are courses that allow students to recover course credit for courses they have failed in the traditional classroom setting. Other programs offer only advanced courses, such as college preparatory or advanced placement (AP) courses. Still other programs offer academic test preparation, such as preparation for AP tests, ACT, and SAT tests. Many programs offer the full gamut of courses from credit recovery to AP classes and academic preparation. Most of the currently available online programs are not degree-granting programs, meaning that students may not take their entire high school course load and receive a diploma from the program, however a growing number of programs are being developed that will allow students to earn their diploma without ever stepping foot into a bricks-and-mortar school (Clark, 2001).

Course development varies among programs as well. Courses can be developed in-house by teachers in the programs, purchased from third-party vendors and taught by a program teacher, or collaborative created with other institutions and agencies (Watson et al., 2004; Clark, 2001). Approximately 80% of the programs state that they developed at least some of their own courses (Clark, 2001). Some of the online programs require teachers to participate in an online

professional development program. This allows course designers/teachers to learn about effective online teaching practices while building their course (Smith & Rose, 2003).

Internet Course Enrollment

Student enrollment in online courses covers a range of courses from general academic to advanced placement to vocational to credit recovery courses. Approximately 25% of students enrolled in social studies courses, 19% in English/language arts courses, 15% in math courses, 12% in natural/physical science courses, 12% in foreign language courses, and the rest in unspecified areas; roughly half of all enrollments are in advanced placement (AP) classes (Setzer & Lewis, 2005).

Teacher Certification/Licensure

Staffing for online programs is of particular concern for most educational stakeholders. Parents want their children taught by teachers who are competent. Administrators and other educators want this same condition in addition to being certified/licensed in the content area they are teaching. The No Child Left Behind Act requires that all students are taught by teachers who are highly qualified. Many of the teachers who teach for virtual programs teach full time in a regular school with approximately 75% holding additional contracts with the virtual school (Clark, 2001).

Course Management Systems

The course management system is the software interface that students use to access the online courses. The course management system is the tool that facilitates both the interaction between the student and the content and communication between other students in the class and the teacher. There are several vendors of course management systems, some of which offer pre-written course content. The most common management systems are Blackboard and WebCT, but others are slowly gaining market share such as Moodle and other open source course management systems (Pfaffman, 2005).

The functions of a course management system allow teachers to be able to create a course that will be stored on a server without having to re-enter all their content every time they teach the course. Some of the features of a course management system are: enabling students to electronically turn in assignments, availability of online tests and quizzes which can be graded

electronically, access to an electronic gradebook, access to the discussion boards, presentation of course content, and fast communication with students (Purnell, 2005). Another important function of the course management system is the availability of centralized technical support (NEA, 2006).

Ultimately, the decision to allow students to access educational opportunities will be made by administrators and policy leaders. These decisions will affect what courses will be made available to students and how students will access those courses. Course management systems have a number of features and services that can be used enhance learning, such as chat rooms and blog features, but administrative decisions will affect what features of the course management system will be open to students.

Quality of Instruction

Discerning characteristics of quality instruction has been the focus of educational and psychological research for many years (Astleitner, 2005). As previously stated, much of the available research is in the post-secondary educational market, but the introduction of technology and online courses has increased research in the K-12 area due to rapid growth of online programs in the K-12 field in recent years. Whether in the online or traditional classroom, quality of instruction has the same basic characteristics. It boils down to a focus on student outcomes – did the student learn the concepts well enough to put them into practice in a setting other than a test.

One of the first characteristics of quality instruction for the purpose of this study is the teacher ensures that instruction is designed to be reflective. Reflective learning refers to an active process of construction in which “memory contents are changed, expanded, linked, structured, or created” (Astleitner, 2005). This requires that teachers find a suitable, but not necessarily maximal, pace of instruction, allowing students and teachers time to think and ask questions (Astleitner, 2005). Too often, the pace of instruction is based on some external element – such as finishing the topic by some predetermined schedule or passing a standardized test – rather than on focusing on student outcomes (Tomlinson, 2005).

A second characteristic of quality instruction for the purpose of this study is that instructional methods are varied. Not all students learn in the same manner, therefore teachers must consider the differences between the learners in their classroom (Astleitner, 2005). This

goal cannot be achieved if teachers expect all learners to have the same outcome using a single method of instruction. In the online classroom, students are free to explore the content in a way that best suits their own learning style (Maeroff, 2003).

A third requirement of quality instruction is that teachers must focus instruction on teaching goals and not on the technology. The instructional design of the course must focus on providing students activities that are both challenging and motivating, moving the student beyond current levels of knowledge to incorporate new concepts, ideas and skills. Teachers in an online classroom “facilitate” learning by providing activities and opportunities for collaboration in the course. Engaging students in activities that scaffold learning, using appropriate digital tools, and directing activities to students’ interests enables students to more actively internalize learning (Reeve 2006). When students are more engaged in the learning process, higher achievement is gained (Reeve, 2006; Bransford, 2000; Prensky, 2006).

Establishment of good relationships between students and the teacher is another characteristic of quality instruction (Astleitner, 2005). Personal relationships must be purposefully created in the online classroom (Revenaugh, 2000; Palloff & Pratt 1999). Collaboration can easily take place across geographic and time boundaries in an online classroom, especially if these relationships are carefully created through the instructional design of the course. As stated earlier, the teacher-student boundaries are relaxed in an online classroom because the students often see the teacher as a contributor to the body of knowledge created in the classroom.

The development of “generic skills”, such as the ability to debate and think critically, is an important characteristic of quality instruction (Oliver & McLoughlin, 2001). These skills can be applied across subject areas, increasing a student’s ability to develop higher order thinking skills and problem-solving techniques (Astleitner, 2005; Oliver & McLoughlin, 2001). Instructional methods that support the development of “generic skills” are such things as: group activities, debates, and the use of graphic organizers (Astleitner, 2005). These things can easily be carried out in an online classroom because discussions are not dominated by a small group of students, allowing for increased participation in classroom discussions as mentioned earlier.

Instructional issues include not only the above-listed characteristics, but a few that are specific to online learning. Requiring learners to check in to the course a minimum number of times per week and setting deadlines for activity completion is important (Bickle & Carroll,

2003, White & Weight 2000). Often, online teachers are lulled into a false sense of thinking everything is going well if they don't hear from their students – no news is good news. Students who don't check in on a daily basis may find themselves overwhelmed by the number of responses in the online discussion boards (Bickle & Carroll, 2003). Not only do the discussion boards provide a sense of connection to other students and the instructor, but they also enhance the depth of learning and increase the critical-thinking of students (Bickle & Carroll, 2003).

Another characteristic specific to online learning is being consistent in the course interface. Through the use of templates for Web page design, consistency of activities and lectures, students become familiar with the way the class is operated similar to that of a traditional class and increases the feelings of success by the students (Bickle & Carroll, 2003). Students become accustomed to the classroom format and learn their classmates' and teachers' styles, which makes the online classroom and classmates seem more tangible.

Because current information is much easier to obtain in an online course, using examples from the current headlines whenever possible to explain content helps students make more of a connection that the content is not an isolated content area but has real application and consequences for others (Bickle & Carroll, 2003). It also stimulates students to find sources other than textbooks for more information. Of course this can also be done in the traditional classroom, but students are much more limited by the lack of availability of resources in a traditional classroom.

No Child Left Behind

In 1983, the report "*A Nation At Risk*" was published by the National Commission on Excellence in Education (Dotterweich & McNeal, 2003). This report outlined a perceived "crisis" in America's educational system and advocated change. According to the Commission, it was believed that America would lose its ability to remain a leading world power because American students were performing lower than our major trading partners in many different aspects of academic achievement. On January 8, 2002, President George W. Bush, signed into law a revised version of the Elementary and Secondary Education Act that quickly became known as the No Child Left Behind Act (NCLB), an act that was based upon the findings of the 1983 report (Dotterweich & McNeal, 2003). NCLB attempts to address the perceived shortcomings outlined in *A Nation at Risk* by placing emphasis on a core curriculum – reading,

writing, math, and science – and holding the education system responsible to ensure that every child achieves a basic proficiency in this core curriculum.

The No Child Left Behind Act listed the following priorities as the fundamental goals of the act: 1. Increase accountability for student performance. 2. Focus on what works. 3. Reduce bureaucracy and increase flexibility. And 4. Empower parents (Bush, 2002). The legislation further established seven performance-based titles which are listed in the following table with a brief discussion of each following the table (Bush, 2002).

Table 2-2 Performance based titles of NCLB

I	Improving the academic performance of disadvantaged students
II	Boosting teacher quality
III	Moving limited English proficient students to English Fluency
IV	Promoting informed parental choice and innovative programs
V	Encouraging safe schools for the 21 st century
VI	Increasing funding for Impact Aid
VII	Encouraging freedom and accountability

Discussion of NCLB titles

Title I: The goal is to close the achievement gap between students labeled as disadvantaged and their peers. This part of the Act requires schools that receive Title I money to ensure all students meet high academic standards in basic skills and essential knowledge. Courses considered “basic skills” are courses in math and reading. This proposal also requires schools to set high academic standards in history and science courses (Bush, 2002). This part of the Act requires schools to test students in grades 3-8 annually to track progress. States are required to publicly report the results of this testing as a way of holding schools accountable for improving the education of students. Reports must be disaggregated by race, gender, English language proficiency, disability, and socio-economic status. This portion of NCLB will publicly identify schools that do not make adequate yearly progress and provides for corrective action for schools that fail to make progress toward the overall goals of NCLB (Bush, 2002).

Title II: This provision is meant to establish and maintain standards through the development of a high-quality teaching force. This is based on the principle that “teacher excellence is vital to achieving improvement in student achievement” (Bush, 2002). The

Eisenhower Professional Development Program and Class Size Reduction program funds were consolidated in order to provide for more flexible teacher quality grants for states and local districts. This funding can be used to strengthen skills of teachers, principals, and administrators. States and districts are required to prove that funding from these programs was used to promote the use of scientific, research-based, and effective practice in the classroom. States are accountable for ensuring that all students are educated by properly trained and highly qualified teaching staffs by developing a plan to make sure that this goal will be met (Bush, 2002).

Title III: This provision recognizes that the nature of education has been changing over the last decade with an increasing influx of non-English speaking students posing a special challenge to schools. This provision helps streamline the portion of the Elementary and Secondary Education Act (ESEA) that deals with bilingual education programs. States set performance objectives for students with limited English proficiency (LEP) and schools must prove that LEP students meet the same high standards in core areas as students who are not LEP students (Bush, 2002).

Title IV: The purpose is to promote parental choice. Providing funds to assist in the opening of more charter schools, allowing for expansion of educational savings accounts, and expanding the public-private partnership to allow for private activity bonds for school construction are a few of the main provisions of this title (Bush, 2002).

Title V: This title is intended to consolidate the Safe and Drug-Free Schools programs. This title allows for schools to spend funds on after-school programs related to drug and violence prevention. Schools must develop plans and report school safety on a school-by-school basis and allows parents the option to transfer students from schools deemed to be unsafe. Schools must develop a zero-tolerance policy for violent or persistently disruptive students to qualify for funds under this title. This title also allows for greater freedom between schools and law enforcement agencies to share information, strengthens gun law enforcement, and increases funds for development of character education classes (Bush, 2002).

Title VI: There are large numbers of students who are dependents of military personnel or are Native American. This title increases the funds necessary to build more educational facilities on or near military bases and Native American lands to educate those students (Bush, 2002).

Title VII: This final title establishes the accountability of schools in how they use the funds provided by the federal government based on a sample of students on the National Assessment of Educational Progress (NAEP) 4th and 8th grade assessments in reading and math (Bush, 2002). This title requires states to provide assurances to the Secretary of Education that the state has adopted standards and established annual assessments for students in grades 3-8, developed a system of sanctions and rewards that holds school districts accountable, publishes school-by-school report cards for public dissemination, and agrees to participate in an annual NAEP for grades 4 and 8 in reading and math (Bush, 2002).

In summary, the NCLB Act attempts to provide incentives to ensure gains in educational quality and hold schools more accountable in response to the report *A Nation at Risk*. Beginning with the 2005-2006 academic year, states are required to administer annual tests in math and reading in each of three grade spans – grades 3-5, 6-9, and 10-11 (Dotterweich & McNeal, 2003). With the 2007-2008 academic year, a science test will be added (Dotterweich & McNeal, 2003). States must bring all students up to the proficient level within 12 years of the passage of NCLB (Dotterweich & McNeal, 2003; Bush, 2001).

The mandate of creating a “highly qualified” teaching force is another major point in the language of NCLB. According to the law, “highly qualified teachers must hold at least a bachelor’s degree from a four-year institution; hold full state certification/licensure; and demonstrate competence in their subject area” (Berry, Hoke & Hirsch, 2004). Within three years of enactment, all current paraprofessionals must have completed a minimum of two years of college, possess at least an associate’s degree, or meet an established quality standard. New hires must have these qualifications upon hiring (Dotterweich & McNeal, 2003).

Impact of No Child Left Behind on Online Learning

So what is the impact of No Child Left Behind on online education? As previously stated, the online education market for secondary and post-secondary outlets is a \$700+ million a year industry (Maeroff, 2003). With the continued expectation of double-digit growth in K-12 online education, we can expect the industry to grow in an attempt to meet the market demand for educational services. Teaching expertise encompasses two broad categories: content knowledge, which is familiarity with the subject matter being taught; and pedagogical knowledge, which is familiarity with techniques needed to teach the subject matter. According

to NCLB, a highly qualified teacher must demonstrate content knowledge obtained through the attainment of a college degree or by passing a “rigorous” test in the subject being taught (Berry, 2003). As the online educational industry continues to grow in an attempt to meet the demand for online educational offerings, teachers who are highly qualified in the traditional classroom, may not be able to meet the pedagogical part of that standard in an online setting without additional professional development to better prepare them for the differences between online and face-to-face teaching.

One advantage of online learning is the capability to increase the curricular offerings of a school. NCLB requires highly qualified teachers in every classroom. Many educators recognize that online learning can help schools meet the NCLB requirements of providing options to students and highly qualified teachers where the schools might be lacking (Watson et al., 2004). Schools in rural areas have much greater difficulty obtaining and maintaining a high quality teaching staff and small faculties often lead to the requirement that teachers teach more than one content area in their certification/licensure. In the state of Alaska, 100 schools employ three or fewer teachers with 36 schools having only one teacher (Barton, 2003). This type of situation makes it impossible to hire one “highly qualified” teacher for every content area. The ability to access online educational opportunities would increase a school district’s ability to provide “highly qualified” teachers. Although Alaska is an extreme example of schools being unable to meet the NCLB requirement of “highly qualified” teachers, much of rural America has the same difficulty (Barton, 2003).

Professional Development

Information technology is changing the way we teach and learn. However, in order to harness the power of today’s information technologies, teachers must learn to be effective using the technology to enhance the curriculum without overpowering what they are trying to accomplish. In this section, I will address the issue of professional development for the online instructor and its importance.

At the present time, most states require that online teachers hold a state teacher license or certification/licensure (Watson et al., 2004). California has some additional restrictions related to teachers such as: the teacher of an online course must be accessible to the students on a daily basis; the ratio of students to teachers in the online course be equivalent to that of a face-to-face

course; the online teacher must have taught the equivalent online class in a face-to-face setting within the previous two years; and that the teacher must hold an appropriate teaching credential (Watson, et al., 2004). The state of Minnesota limits the student-teacher ratio to 40:1; programs must delineate the methods for interactivity and assessment between students and teachers; and the online teacher should have similar communication patterns with online students that they would have in a traditional course (Watson et al., 2004). In addition to these restrictions, California and Minnesota require that online programs have policies that address teacher performance. In the absence of state policies and requirements, online programs develop their own standards for teacher qualifications, some of which include implementing their own professional development programs and require that teachers take an online course to demonstrate an understanding of the experience of online learning (Watson, et al., 2004).

While the growth in online learning opportunities is occurring at double-digit rates (Moser, 2006), the number of teachers capable of teaching online is not (Crichton & Childs, 2004). Online learning has the perception of being subordinate to that of traditional teaching and learning. As stated previously in Chapter 1, the 2001 *Kappan* survey reported that people believe that online learning is here to stay, but very few actually wanted their children to participate in online learning experiences because of this perceived lack of a quality educational experience. Many traditional faculty have concerns about the quality of online courses with respect to student learning. Assuring parents, students, and faculty that solid research, theory, and principles are used in the development of online courses is essential to changing public opinion about online courses (Barker, 2003). This is why professional development for the online teacher, especially new online teachers, is critical.

Because of the growth of online courses for high school students, there is a demand for an increase in the number of teachers who will “build, administer, and teach online” (Crichton & Childs, 2004; Arsham, 2002). Future online teachers must make a paradigm shift from that of “faculty teaching to student learning” (Barker, 2003). Because the online environment requires that teachers develop new skills, it seems appropriate that teachers are given an opportunity to develop those skills in a supportive environment (Palloff & Pratt, 2000). However, teachers often are not afforded adequate time to make the shift in practice or develop an effective “e-pedagogy” that is necessary to become an effective online teacher (Crichton & Childs, 2004).

The design of online courses is more about student learning than about the technology. Technology is simply the tool used for communication of the content and the learning. In most cases, the instructor has the expertise in the content area so faculty development must focus first on the instructional design and then on the technology (Barker, 2003). Cole (2000) advocates an acculturation process for the professional development of new online teachers. During this process, teachers are exposed to the learner-centric paradigm that characterizes quality online instruction (Cole, 2000). One method for this process is to have future online teachers “shadow” a course, meaning that the future teacher observes an active course (Cole, 2000; Barker, 2003). Another method is to immerse the future online teacher in an online professional development course so that the teacher becomes a student in order to better understand the online teaching-learning process (Crichton & Childs, 2004).

Online courses change the way that teachers and students interact. This change in interaction is a specific area of professional development that needs to be addressed (Barker, 2003). Revenaugh (2000) states that the Internet is as much about communication and interaction as it is about learning. The connections made in an online classroom are unique and would not generally occur in a traditional setting (Wood, 2005). The relationships that develop in an online classroom are limited only by time and access rather than by distance and social class (Palloff and Pratt, 1999). An online teacher has an opportunity to develop a more personal relationship with students which contributes to the overall effectiveness of the course (Perreault et al, 2002). For most teachers, this sort of interaction is not something they have ever experienced, which is why it is important to be addressed during the professional development process.

Today’s Students

“Net-gen”, “generation Y” – these are just some of the names given to today’s students. This generation has never known a world without cell phones, video games, instant messaging, and the Internet. Prensky (2001) has termed this generation of students “digital natives” because they have been acculturated into a world full of technology and embrace it heavily. According to Prensky (2001) the rest of the population, including today’s teachers, are known as digital immigrants because instead of seamlessly using the technology, the older generation is learning to adapt to the environment as immigrants do to a new culture.

Digital natives are accustomed to receiving information virtually instantaneously. The attention span of today's teens is anywhere from 30 seconds to five minutes (Brown, 2000). Evidence exists that suggests the rapid, hypertexted world of video games, television, and the Internet is reshaping the brains of today's students (Prensky, 2001; Meyer, 2003). Today's students are accustomed to "multi-tasking" – doing several things at once. They thrive in highly networked environments and demand instant gratification (Prensky, 2001).

Most teachers today are not as comfortable using technology and therefore are also more reluctant to use it. Just as immigrants speak with an accent, so too, do digital immigrants. The challenge of using technology in the classroom, either to supplement instruction or use it as the primary method of instruction, illustrates the discomfort teachers have with technology and this disconnect makes professional development programs very important (Crichton & Childs, 2004).

Today's face-to-face educational system does not fit with the way the digital natives learn or function. (Prensky, 2006). Our educational system is steeped in tradition. Teachers continue to incorrectly assume that students will learn the same way they have always learned and that the methods that worked when they were in school will work just as well today. The "digital immigrant" teachers are not as comfortable with today's new technologies and reluctant to embrace it as a tool for enhancing the curriculum. Offering teachers an opportunity to learn in a digital environment, such as through online professional development programs, allows teachers to experience, firsthand, the way technology can be used in the classroom to enhance student learning.

One concern of online learning proponents is that online courses in general leave students in isolation, lacking social contact that is necessary for future successes. This is where instructional design is crucial because good instructional design can ensure the proper consideration of presentation of content, purposeful collaboration, and ample opportunities for students to communicate, making the online environment much like any other educational setting – except perhaps that students may never see classmates or teacher in person. Students are much more likely to participate and be successful in the educational setting if they are interested. Since digital natives would much rather use a computer than traditional pen and paper, it is hoped that online courses will pique the interests of students enough to keep them in school or inspire them to pursue higher education.

With Internet-based learning, we have a great opportunity to use a medium that will allow today's digital natives to become more engaged in the education process. Students who are actively engaged in learning will retain more (Cushman, 2006; McCarthy & Kuh, 2006). Today's digital natives are using computers and technology everywhere else in their lives, why not for structured educational purposes? Using the Internet as an educational portal can encourage active engagement in the learning process through collaboration and exploration of the content in a way that allows them to use their own multiple intelligences and learning styles (Prensky, 2006).

Perhaps the most important aspect of online coursework is the bridge provided to today's students. Building reflection and interactivity into the design of the instruction allows students to construct the knowledge and integrate it into their own cognitive schemes for later recall.

Summary

Online education is moving more into the mainstream for K-12, growing at double-digit rates. No longer is it only a consideration for home-schooled students or students looking for an alternative to regular high school classes. It is expected that more states will mandate online classes for students, similar to the recent Michigan decision. The major advantages of online learning are access to courses currently unavailable in a school, access to highly qualified faculty to teach those courses, integration of technology into the educational process, flexibility, and anytime, anywhere learning. These advantages enable schools with limited resources to essentially level the playing field for their students, narrowing the competitive gap between those with the technology access and the "have-nots".

Today's students are also changing. Having grown up with technology, they are rapidly embracing online courses, further spurring growth. This growth, in turn, requires teachers to develop new skills and recognize that they must learn new pedagogies to be successful as an online teacher. However it is not clear that this kind of professional development of online teachers can occur rapidly enough to offset the potential of rapid growth of online programs, leading to programs that are unmonitored with minimal to no quality control (Moser, 2006; Maeroff, 2003).

From what we have learned in this study, an administrator or principal looking into online programs will have some knowledge of what to look for in an online program to provide

the best options for their students. The study compared the characteristics of several online high school programs, looking at “quality” measures such as curriculum offerings, professional development, and quality control measures. It provides a knowledge base to be used by administrators faced with a wide array of online provider choices.

CHAPTER 3 - METHODOLOGY

This chapter focuses on the research methodologies that were used for this study. It outlines the research questions; explains the rationale for case study design; outlines the research design, methods of data collection and analysis; objectivity; the reliability, validity, trustworthiness, and transferability of the research.

Research Questions

This study investigated and compared three different online high school educational programs looking for elements of quality. The following are the three primary research questions and one subquestion guiding this study:

1. What attributes indicate quality of instruction in an online high school program?
 - a. How do online programs assure quality of instruction in the courses they offer?
2. What characteristics do these three successful online high school programs have in common?
3. What do online teachers do to ensure quality of instruction?

Rationale for Case Study Design

A descriptive multiple case study was chosen for this study. The research questions above were posed so I could uncover characteristics of online educational programs that would provide parents, students, teachers, and administrators with a degree of confidence that the quality of the educational experience in an online course meets certain standards. Generally, qualitative research is conducted by someone who is intimately familiar with the object of the study. In this case, I have been teaching online for several years for a high school online program with curriculum developed during a required professional development course tailored to online course development.

A case study is a qualitative research technique that Creswell (1998, p.63) defines as “an exploration of a bounded system (or case) through detailed, in-depth data collection involving multiple sources of information rich in context.” Merriam (1998, p.27) defines a case study as

“an intensive, holistic description and analysis of a single instance, phenomenon, or social unit.”

The case study is the chosen approach to use for this research because Internet-based learning programs are single entities that generally do not overlap. Each Internet-based learning program is a separate entity, unique in its administration and experience, making the case study a logical choice. Because three different programs were studied, this is a multiple case study with cross-case comparison of the programs.

The audience for this research is composed of administrators, teachers, parents, and students who might consider engaging in, designing, teaching, providing, or learning in such a program. Often, these groups do not know what questions to ask or where to look for information about quality of online programs. The goal of this research is gain a deeper understanding of the characteristics of quality online programs to enable administrators, teachers, parents, and students to make informed choices about the options available.

The overall intent of this research is to offer a descriptive account of several online educational programs for high school aged students and how they ensure quality in their programs. A descriptive case analysis can be tailored to describe in detail the case being studied without making judgments (Merriam, 1998). Because the area of online education is so new to the K-12 realm, the information presented in this descriptive case analysis will help form a database for future comparison research and theory building (Merriam, 1998).

Role of the Researcher

I, as researcher, come to this research through previous experience as a classroom and online teacher. In the spring of 2001, the principal of the school where I was employed talked about an online program that the school had recently joined and asked for a volunteer to participate in an online curriculum writing class and then teach that class. I proposed an AP microeconomics course which was accepted, leading me on this path of teaching high school students online and further leading me toward defining my constructivist teaching principles.

Throughout the curriculum writing process, many of the questions that guide this research plagued me: How do I know students can learn online? How do I know I can teach online? How do I know if this is a subject that can be taught online with success? How do I know that the program I teach for is a quality program? These questions continued to come to mind after being approached by another online teacher for a different program who asked if I

recommended that my students take the AP exam that corresponds to my class. He related that he wouldn't recommend his students take the exam because the online course he taught was substandard for success on the exam. My fears about the quality of the course I had written were dispelled upon receipt of the scores of my students; 100% of the scores were 3 or above, considered passing by College Board standards.

Because of my familiarity with online programs and online teaching, I was seen by most of the teachers of the programs studied as an insider and they were very willing to speak candidly about their experiences teaching online. Through review of the program web sites and being familiar with several aspects of the online programs prior to the interviews also helped in obtaining adequate information from the program administrators. Personally meeting many of the interviewees prior to the actual interview also contributed to success in obtaining information.

The program I teach for is Virtual High School, Inc. (VHS), and my relationship with this program influenced this study in several ways. The first influence on the study was provision of letters of introduction to several program directors for possible inclusion in the study. The second influence, although this was an indirect influence, was guiding the formation of the interview questions for the teachers and administrators of the three programs that did participate.

This influence and experience does interject some bias into the study. Since commencing graduate school, I have had the opportunity to read a large amount of research about virtual high school programs and VHS shows up in a good deal of it. IVHS is referenced as well which was another reason for choosing these programs for the study. The potential for VHS to bias my analysis of its program and compare the other programs to it was very real and considerable effort was made to ensure that each program was analyzed on its own merits before the cross-case analysis was done. Triangulating the data and discussing the findings with others who do not have a vested interest in the data aided in minimizing this bias. Member-checking – asking members of each organization to review the individual case descriptions for accuracy and clarity – also helped ensure that my bias did not play too heavily in my analysis.

Research Design

This section will address the research design chosen for this study, outlining population and sample, protection of human subjects, and the research site.

A number of online education programs for high school students have been written about and held out by the literature as exemplars of high quality. Two of the programs that were used for this study have been included in such literature. Each program was studied and analyzed first as a single case, offering a snapshot of the overall program. The following information was obtained about each individual program for descriptive purposes:

- Impetus for start of program
- The technology platform used
- Curriculum offered, how it was developed, and grade levels served
- Course structure – standardized for entire program or not
- Enrollment, including eligibility requirements for enrollment, numbers of students enrolled, student supervision, and whether students are school or home-based
- Program dropout rates
- Funding for the program
- Teaching credentials including selection of faculty, experience and certification/licensure, and faculty development procedures, as applicable
- Student services and support offered
- Assessment procedures, including quality control measures
- Program administration and policies

Single case analysis for each of the cases described, in detail, the items in the above list, to give a clear picture of each program. I attempted to explain why the program chooses to do things the way they do. How the features and characteristics of the program contribute to the overall quality of the program was the focus of this analysis. The cross-case analysis compared program characteristics of the three programs to see similarities and differences.

Comparison of advanced placement (AP) scores was not undertaken as originally planned. This was due to the fact that the only program that maintains this data is VHS, Inc. Illinois Virtual High School does not have access to AP scores for students who take AP classes in their program. Lawrence Virtual Secondary Program does not offer any AP classes and therefore does not get such results. The inability to obtain these scores, however, does not detract from the overall findings of the study.

Population and Sample

The population studied in a qualitative study is a purposeful sample. A purposeful sample is used as a means of providing me with a solid basis to discover, understand and gain insight of a phenomenon (Merriam, 1998). For this reason, samples are chosen to ensure that the information obtained from the sample will offer the clearest and best picture of the case being studied (Merriam, 1998; Creswell, 1998).

Three online high school programs, two of which have been identified in the research as being of sufficient quality to support the cross-analysis of programs, were used as the population for the study (Watson, et al, 2005; Setzer, 2005; Rose & Smith, 2003; Roblyer & Elbaum, 2000; Clark, 2001). The first organization is a national, non-profit educational program, Virtual High School, Inc, (<http://www.goVHS.org>) of Maynard, Massachusetts. The VHS organization was chosen because I am intimately familiar with the program. Because of this affiliation with the program for the past five years, it was chosen for convenience and familiarity. It is one of the first online high school programs and often singled out in the literature as a quality program.

The second organization is Illinois Virtual High School (IVHS) (<http://www.imsa.edu>) of Aurora, Illinois. This organization is a state-wide program and was one of two state-wide programs petitioned to participate in the study. The other program, Florida Virtual Schools declined participation at this time as this study did not fit into their current research needs.

The final program participating in the study was the Lawrence Virtual Secondary Program (LVSP) (<http://lawrence.ks.schoolwebpages.com/education/staff/staff.php?sectionid=70>). This program is part of the Lawrence, KS Unified School District #497. Other programs were asked to participate, but declined at the present time. Ultimately, the study encompassed a national program, state program, and school district program, representing a cross-section of the types of virtual school programs.

Objectivity

I have been affiliated with one of the programs in my study for more than five years. This affiliation is a double-edged sword. On the one hand, it has given me a familiarity with online programs and certain indicators of quality. This familiarity made it easier to obtain the information needed because study participants saw me as an insider looking to strengthen the

public's view of online education, rather than an outsider trying to find more ammunition to shoot down online educational programming. On the other hand, this affiliation had the potential to inject some degree of bias into the study.

By recognizing the bias that exists, care was taken to view the data from each program on its own merits rather than comparing it to my own personal experience. Triangulation of the data was done through comparison of data collected from the interviewees, review of the program's web site, and data collected from the teachers to validate the findings. The use of member checking was also used in an attempt to reduce the bias and ensure that a careful and in-depth picture of each program takes place.

Protection of Human Subjects

Several organizations petitioned to participate in the subject required completion of an IRB application and procedures were followed to comply with that program's policies. In addition, the study complies with the Kansas State University's Committee on Research Involving Human Subjects. Participants (administrators and teachers in the programs) were asked to sign an informed consent (see Appendix A) after they had been given the opportunity to ask questions and understand their rights prior to participation in the study.

Research Site

Virtual High School (VHS) held their first "*Advancing Internet-based learning*" conference in late September 2006. During attendance at this conference, I conducted face-to-face interviews with some of the program administrators of VHS and IVHS. Further interviews of administrators and online teachers took place using face-to-face, email, and telephone communication as necessary to obtain a detailed understanding of each program. Interviews of teachers and administrators of the Lawrence Virtual Secondary Program occurred at the program's bricks and mortar site with follow up through telephone and email as needed.

Data Collection

Data collection for this research came from two sources within each program. The first source of data came from program administrators who were personally interviewed and/or surveyed to obtain information about the operational aspects of the program. Interviews were conducted (at a minimum) with the director/CEO, dean of curriculum, chief operating officer,

and registrar, or their equivalent at the state and school district level. I interviewed four VHS administrators, three IVHS administrators, and two LVSP administrators. The interviews were taped using a digital recording device, transcribed, transferred to CD-ROM, and stored in accordance with KSU IRB policy. A list of administrator interview questions can be found in Appendix B with additional questions added for further clarification or following up on partial answers during the interview process.

Interviews of the directors of VHS and IVHS were conducted at the “*Advancing Internet-based Learning*” conference in late September, 2006. The directors were interviewed separately using the same set of questions (found in Appendix B). Contact was made with other administrators of VHS at this conference, but interviews of the other administrators were done via email and telephone conversations within the following two weeks. Email and telephone interviews were conducted with the other administrators of IVHS during the month of October. All administrators were interviewed using the same set of questions previously mentioned. Face-to-face interviews were recorded using the digital recorder. Handwritten notes were taken during telephone conversations to record as much of the conversation as possible. During the analysis of the collected data, email was used to clarify the data as part of member checking of facts.

Administrators from the program referred me to 5-10 teachers for interviews. Referral to seven IVHS teachers, eight VHS teachers, and four LVSP teachers was made. All teachers were sent emails with two follow up emails sent to the nonresponders in an attempt to get more participation from the teachers. Information was obtained from seven VHS teachers, six IVHS teachers, and four LVSP teachers. These interviews were done via email conversations using the list of questions in Appendix C. All the teachers who responded were very candid and answered the questions in great detail. As the analysis of data progressed, email was used to obtain more data as needed. These email interviews are stored with the digital files and transcripts on my computer and will be transferred to CD-ROM following completion of this study.

Interviews of the administrators and faculty of LVSP were conducted face-to-face December 8, 2006, at the administrative building in Lawrence, Kansas. The administrators were interviewed using the same administrative questions found in Appendix B with some modifications because the program does not write their own courses or offer AP classes. For this reason, these questions were dropped from the interview format. Three teachers were interviewed at the site using the same set of questions found in Appendix C. Modification of the

interview was made because these teachers did not write their own courses so those questions were irrelevant to this group of teachers. The administrator and teacher interviews were recorded and transcribed. One of the teachers was interviewed by phone because she did not come to the office on Fridays, the day of the interview. During the phone interview, notes were taken trying to capture as much of what was said as possible. Email was used as necessary to obtain clarification and further information for the study such as reasons for teaching the courses the teachers teach, and how the teachers in the programs are reimbursed.

A third source of data included an examination of different types of documents. Each program has a Web site with data regarding the program. This information was used to obtain background information prior to interviewing administrators and teachers so I could become familiar with the overall program. Faculty handbooks and procedure manuals were available from VHS and IVHS. These documents aided in triangulation of the data by verifying information obtained from the administrators and teachers.

Interviews and surveys were the preferred method of data collection for this study. Qualitative data can be obtained through field observations, however in this study, observations would have involved obtaining informed consent from parents of students who take courses online from a multitude of locations, perhaps even worldwide. This obviously would have created a logistical difficulty for me. Another reason observations were not feasible was because administrators of the online program would have to set up special precautions in the online course to ensure, from an administrative point of view, that the observer did nothing more than observe. In addition, if parental consent could not be obtained, it would be difficult to exclude me from viewing comments from students whose parents had not consented.

Each of the programs has consented to be identified by name in the final report. The names of individual teachers and administrators who responded are kept anonymous.

Data Analysis

In qualitative research, the data analysis requires a researcher to make sense of the data. This process involves “consolidating, reducing, and interpreting” (Merriam, p.178) the information received during the interview and observation process of data collection. Unlike quantitative research, in which coding schemes and hypotheses are conceived prior to the research, qualitative research allows coding schemes and theories to emerge from the data

(Merriam, 1998). In a qualitative study, the coding and analyzing of data is what enables a researcher to make a unique contribution to the field of study (Foss & Waters, 2003).

Lincoln and Guba's (1981) guidelines for developing categories for data coding will be followed in the analysis of the data. These guidelines are:

1. The number of people who mention something and the frequency with which it arises in the data indicate an important dimension.
2. The audience may determine what is important.
3. Some categories will stand out because of their uniqueness and should be retained.
4. Certain categories may define things that might not otherwise have been recognized and provide a unique picture of the situation.

Another guideline for developing categories is to ensure that the coding categories will adequately answer the research questions (Foss & Waters, 2003).

Data coding in qualitative research, both during and after collection, allow the coding categories to emerge from the data (Merriam, 1998). Merriam (1998) refers to this process as constant comparison. As data collection continues, transcripts of the data were analyzed to inform future data collection and ensure that a complete case study of each entity was performed. The ultimate goal of this case study is to define the factors that make these programs examples of quality programs.

In the first phase of the data analysis, each program was analyzed separately. The collected data were reviewed on an individual program basis to find evidence of how the program performs each item listed earlier in the chapter. Categories were coded so that individual examples could be culled from the data to answer the research questions.

The second stage of data analysis was conducting the cross-comparison analysis. In this phase of the study, all the data from each of the programs were combined comparing the characteristics of the programs to discern areas of commonality and how those characteristics contribute to the overall success of these particular educational program.

Reliability and Validity of the Research

Reliability of a study relates to whether it can be replicated, achieving the same findings (Creswell, 1998; Merriam, 1998). With qualitative research, the researcher is attempting to externally describe and explain a situation as one who is inside that situation would experience it.

Since the world is not static, this is a very difficult requirement. The reliability of a qualitative study resides with the fact that repeated observations in similar environments should produce the same general results (Merriam, 1998).

Validity of a qualitative study relates to how well the results of the study match the reality of a situation. Because situational reality reflects the personal viewpoints of experience for those experiencing it, validity of a qualitative study can be enhanced through triangulation of the data, allowing members to review the tentative data interpretations, peer examination, having participants involved in all phases of the study, and clarifying researcher biases at the beginning of the study (Merriam, 1996). These methods can help improve the internal validity of the study.

Creswell defines five standards which can be applied to qualitative research to help improve the validity of a study. These standards are: the research questions should drive the data collection and analysis; data collection and analysis techniques should be competently applied; the research assumptions should be stated explicitly; the study should have overall warrant; and, finally, the study should have value in the sense that it will help improve practice and inform constituents. Maintaining standards and rigor in the data collection and analysis process will ensure that the study is both reliable and valid.

To have any effect on the practice or theory of education, a study must be trustworthy. The study must be conducted in such a manner so that the insights and conclusions of the research are logical and believable (Merriam, 1998). Creswell (1998) defines eight methods that can be used to ensure trustworthiness of a study. Creswell further explains that it is unnecessary to do all eight to ensure trustworthiness, but at least two should be performed to enhance a qualitative study. These eight are: (a) prolonged engagement and persistent observation, (b) triangulation, (c) peer review or debriefing, (d) negative case analysis, (e) clarifying researcher bias, (f) member checks, (g) rich, thick descriptions, and (h) external audits (Creswell, 1998, p. 201-203). I have already declared my researcher bias in the Role of the Researcher and Objectivity sections of this chapter. I used triangulation, member checking, and thick, rich description to ensure that my bias will have minimal effect on the outcome of my research and ensure that each organization is evaluated on its own merit rather than compared to my preconceptions obtained through my experience with VHS.

Transferability

Transferability of a study to other similar situations is an overall research goal. Not only should the study be internally valid and reliable, it should also be applicable in other situations of a similar nature. This study is not designed to be generalizable across all Internet-based learning programs, but should provide insight and further understanding of characteristics of programs that might influence the overall quality of the program and education received by students in those programs. Readers should be able to determine for themselves, the applicability to their own situation.

For this study, three levels of online high school programs were analyzed and compared – a national program, a state-run program, and a school district-run program with one program of each type being studied. Two of these programs have been cited in the literature as being of high quality and successful in educating high school students. This should make the findings of the study useful to other online high school programs and inform potential consumers of such programs of what characteristics might constitute a high quality educational program.

Addressing the Limitations of the Study

The intent of this study was to look at three online programs to discover the characteristics associated with quality. Because of the proliferation of online programs, there is a fear that online programs are not given the proper oversight to ensure quality of instruction. This study will look only at online programs for high school students attempting to understand what features indicate that the quality of instruction and the overall program quality. The scope of this study was not meant to discover what constitutes best practices with regard to administration and teaching of online programs. There is a large body of research indicating that there is no significant difference between traditional education and online education, but this study will not add or detract from that body of research either.

CHAPTER 4 - Case Descriptions and Analysis

In this chapter, the three programs participating in the study are described individually. Information for these case descriptions came from interviews with administrators and teachers of the program and program web sites. The descriptions include the history of the organization, enrollments, course information including course development, faculty development, and quality assurance procedures used by the organization. Each program has been polled, granting permission to be identified by name.

Case Descriptions

Virtual High School, Inc. (VHS)

Virtual High School, Inc., (VHS) is an international, consortium-based program. Its mission is to expand the opportunities of students by providing high quality learning opportunities that are available to more than those students deemed “smart enough” or “rich enough” to afford such an education. VHS also seeks to create a larger learning community of educators who can work together to improve educational quality.

VHS began in October, 1996 funded with a US Department of Education Technology Innovation Challenge Grant. The grant was a 5-year, \$7.4 million grant. VHS started as a research and development effort to answer two essential questions: 1. Can students learn in an online learning environment? 2. What is the professional development the teachers need to teach online?

Administratively, VHS has a central core staff. The technology team takes care of the liaison work with the online course provider (teachers) and the provider of the hosting services (Blackboard). There is a staff of instructional designers who assist the teachers during the development of the online courses by facilitating the online professional development courses – Teachers Learning Conference (TLC) and NetCourse Instructional Methodologies (NIM) – as well as conduct the other professional development opportunities VHS offers. This group is headed by the Chief Learning Officer. A Global Services team is responsible for recruiting new schools and new business development. The Finance and Administration group, headed by the

Chief Operations Officer, is responsible for all financial aspects, such as invoicing schools, payroll, contract negotiations, etc. Finally there is a Chief Executive Officer who oversees all these groups.

All VHS courses are written by VHS faculty members during a required professional development process and assisted by the instructional designers. The process for faculty written courses entails completion of a 22-week graduate level online course known as the Teacher Learning Conference (TLC). During this 22-week period, teachers are learning how to design and teach an online course. They are also learning about VHS design and delivery standards while writing curriculum that meets those standards as well as the national curricular standards. As courses are being written, the TLC facilitator evaluates the courses and offers feedback so that appropriate revisions can be made during the 22-week process. Once the courses are written, they become proprietary to VHS. New teachers to VHS can either write a new course through the TLC or teach an already written course by completing a 10-week course, NetCourse Instructional Methodologies (NIM).

In its first year of operation, 1996-1997, 30 teachers completed TLC. During 1997-1998, 710 students from 28 schools took the first VHS courses. The program and enrollments have steadily grown since its start. Summer school classes and middle school classes were added during the 2003-2004 term. During 2005-2006, 7,804 students took classes through VHS from 345 schools. The program is projected to serve 10,000 students during 2006-2007 worldwide.

VHS is a consortium-based program. It was not started to be in competition with schools, but rather to offer opportunities to expand the student's day outside the four walls of the school. This corresponds to their mission: "to develop and deliver standards-based, student-centered courses that expand students' educational experience and 21st century skills" (<http://www.govhs.org>). Contributing to this mission statement is the philosophy behind it. VHS has a belief that educational opportunities should not be limited to those who can afford it, but should be available to everyone regardless of time, place, presence, or lack of qualified faculty. Online education offers schools a wide array of courses to meet the needs of the student population. It also offers experienced, dedicated, highly qualified teachers. Another belief is that when schools work in collaboration, they become part of a larger educational community. Through involvement in this educational community teachers and schools become part of a

larger group allowing for more sharing and collaboration with others in that community (<http://www.govhs.org>).

The VHS consortium offers several membership options to schools. The most comprehensive enrollment is as a full-member school. This allows a school to offer 25 seats per semester in any of the courses VHS offers. In return, the school provides a teacher to the consortium who will write and/or teach a VHS course as part of their in-school teaching duties. Lower level memberships are available. VHS enrollments primarily come from their member schools, but they do offer an option for individual-tuitioned classes. The cost of full-membership in the consortium is \$6,500 per year which averages to \$130 per student but the price per student can be as high as \$425 per semester for an individually-tuitioned student. VHS is not a diploma-granting institution. Students receive credit from their home school for any course taken through VHS.

All VHS teachers remain employees of their home school rather than employees of VHS. Teachers have a scheduled VHS period built into their teaching schedule. This means that if the teaching contract says they teach six classes with one preparation period, five of the six classes are traditional classes and one class is a VHS class. During the VHS period, the teacher may have students who are taking VHS courses in their classroom, depending on how the school sets that up. Many of the schools also offer a stipend added to their teaching salary for teaching an online class for VHS. As with most teachers, time is spent outside the school day grading student work and preparing lesson plans, although the time spent outside the school day is not strictly devoted to VHS duties, but regular teaching duties as well.

VHS courses cover a range from advanced placement (AP) courses to course recovery courses, general education courses, and elective courses. VHS offers an AP academy beginning with 4-week modules for middle school students, progressing through pre-AP classes to AP classes. The educational philosophy behind all VHS courses is social cognitive learning theory. Although no directly stated identifiable policies or procedures exist to back up this claim at the administrative level, VHS does believe and follow the theories of Vygotsky and the Zone of Proximal Development (ZPD). ZPD is the instructional zone where a learner is able to do some task with some level of guidance. With scaffolding, learners can be guided to a new perspective and greater responsibility for learning (Hung, 2001). For this reason, courses use heavy amounts

of socialization and discourse to foster peer-peer and peer-teacher mentoring relationships. These relationships facilitate collaboration as a way to enhance student learning.

Courses are organized in a week-to-week structure which VHS administrators referred to as scheduled asynchronous. A semester's worth of material is covered in a semester which is the scheduled part. However there is some freedom in when assignments are done within each course which is the asynchronous part. Students are not free to start and finish the course according to their own timetable. A week in a VHS class begins on Wednesday and ends on Tuesday rather than the traditional Monday through Friday schedule in traditional brick and mortar buildings. Most courses are one semester in length offered during both the fall and spring semesters, with 32 of the 375 courses currently offered being full-year courses. Courses are delivered using the Blackboard course management system.

VHS courses are seminar-based allowing students to exchange information, participate in discussions, and collaborate with their classmates and instructors. Instructors are facilitators of learning and primarily responsible for managing and monitoring students. VHS teachers are required to participate in their online classroom as completely as they would participate in their traditional classroom. Student work is to be graded in a timely fashion and student progress is reported to their home school every two weeks. At a minimum, VHS teachers should access their courses at least once a day and answer student questions within 24 hours Monday through Friday. Communication between teachers and students is facilitated in a couple of ways. Teachers create a private thread for students where private conversations are held. There are discussion forums designed to engage and involve students in thinking and talking about what they know. Blackboard, the course management system used by VHS, also offers a chat room where teachers and students can communicate in real time for class discussions or tutoring. In the future, VHS will begin using the journal feature and team features of Blackboard, including a Wiki and blog function to each of their courses to further expand the collaborative abilities of VHS courses.

VHS teachers have a state certification/licensure in their content area from a state Department of Education. Participating schools in the program come from 22 states so identification of a specific state certification/licensure is not possible here. Approximately 85% of the teachers have at least a master's degree and most have eight years or more teaching experience. As previously explained, all teachers complete a graduate level online course that

prepares them to teach online – either the 22-week TLC or the 10-week NIM. Teachers for VHS generally agreed that this method of professional development did prepare them for teaching their class. One VHS teacher commented that TLC prepared them to teach online as well as anything can, “but nothing really prepared you for teaching except teaching itself”. Another teacher stated “TLC is designed in the same format as the course I developed for VHS while I was participating in it. The facilitators modeled best practice and made clear the standards that I was expected to adhere to.”

VHS takes pride in maintaining high quality. Quality courses start with online course design and national curriculum standards which are incorporated into the writing of each VHS course during TLC. A list of the broad online course design standard benchmarks and indicators for those benchmarks can be found in Appendix E. When the benchmarks were created, the focus was on student learning and what it would look like, how it could be managed, what learning styles were used by students, and how to design instruction to meet the needs of those diverse learners. VHS AP participation rates, AP exam pass rates, and course completion rates are also used to evaluate courses.

In terms of overall program quality, VHS looks at several elements of the program. VHS collects self-reported data from teachers related to satisfaction with the courses they teach, were teachers able to achieve what they expected to achieve, satisfaction with support of their course from VHS and Blackboard, and other aspects of the course such as the gradebook, and registration. Self-report data are also obtained using student and administrator surveys looking at similar items in the teacher surveys.

VHS also looks at membership contract renewal rates, seat utilization rates, and the professional development experience as indicators of overall program quality. Currently the membership contract renewal rate is 85-90%. Seat utilization rates refer to how many of the allocated seats are actually being used by the member schools. The professional development experience measures how proficient teachers are when they are in course delivery. Data points include how many teachers enter and successfully complete the professional development and graduate to teaching an online course.

In the first semester of course delivery, all teachers are in what is called a Level I review. In this review period, teachers are associated with a VHS faculty advisor, from the curriculum coordination staff, who guides, assists, and reports on their progress on a weekly basis to ensure

proficiency of online teaching skills. Once teachers pass through Level I review, VHS is comfortable with their online teaching skills and there is no need to monitor them as closely. At the present time, 90% of VHS teachers have graduated out of Level I review after their first semester of online teaching. A less formal data type VHS collects is looking at the number of teachers retained or having to return to Level I review. Some teachers return to Level I review for factors that are beyond their control, such as illness. Other reasons to return to Level I review is if teachers are having issues with their course such as: Not responding to student inquiries in a timely fashion, not checking in with the class on a regular basis, or not seeming to be as responsive as needed for students to be successful. Teachers who return or are maintained at Level I review are usually on a corrective action plan. Teachers on Level I review have two primary consequences – either they are escalated on the plan and they reach the proficiency expected of VHS teachers or they are relieved of their VHS teaching duties. If the decision is made to relieve the teacher of their VHS teaching duties, contact is made with the teacher’s school administrators to discuss the reasons behind the decision to relieve the teacher.

Each VHS course section is limited to an enrollment of 25 students, with no more than four students from any one school enrolling in a single section. This allows for diversity among course student populations. In recent years, VHS has started offering more than one section of the more popular courses. Ensuring that the educational experience for all students across sections is the same is something VHS has started emphasizing. Creation of a single master course is the beginning of the process. This ensures that students cover the same content across all sections. VHS curriculum coordinators also monitor all sections and provide assistance to the instructors to ensure similar experiences. Teachers of the same course are also offered a common area online that allows them to share ideas, activities, and teaching utilities.

From a teacher perspective, composing a VHS course that meets VHS standards is a monumental experience.

“Composing my first VHS course was an intense experience. I poured the best I have as a teacher into this one course. For example, in week 12, we study and write haiku. I spent hours and hours on research. I poured [sic] through several hundred websites before deciding on the handful I use within this particular unit of study. It was overwhelming and time consuming, but when registration opened and I saw how many had registered into my course, I burst into tears. I felt like I’d spent a year preparing a huge party and students signed up to attend.”

Another teacher commented:

“I started writing my own course, but the task was overwhelming. I was inventing the course and lacked the knowledge I needed to make good decisions about sequencing & pace AND I was brand new to the Lotus notes software AND the concepts in online teaching. Between my frustrations and being overwhelmed with crises on the homefront [sic] (3 immediate family member with serious health issues in one year), I was ready to quit. VHS suggested that I take on the popular short story course because they needed to offer additional sections.”

In writing courses to teach online, teachers found that they had to change the way they teach in subtle ways. Materials used in face-to-face classes were modified for online use. Teachers also liked the fact that they have the ability to change the courses to better meet the needs of the students. Quizzes and self-evaluations are easily worked into the class. The structure of the class is often more repetitive than a traditional face-to-face class. Teachers surveyed reported they devote from 1-4 hours per day per course on their online course. Many of the VHS teachers have a VHS period during their school day to deal with their VHS classes as a way of compensating for teaching the class.

Illinois Virtual High School (IVHS)

The Illinois Virtual High School (IVHS) began as an idea of several individuals from different higher education institutions in the state of Illinois. It was brought together by Cathy Gunn, who, at the time, was the director of the Illinois Virtual Campus (IVC). IVC provides Illinois residents with support and access to all online course offerings of Illinois' state colleges and universities. It also provides statewide leadership for development of quality online higher education offerings to meet the needs of the state's residents (<http://www.ivc.illinois.edu>). Dr. Gunn had an interest in K-12 virtual education, but didn't have the ability to pursue it on her own. In 1999, she brought together individuals who had an interest in K-12 virtual education. This group decided to pursue the venture and applied for a small planning grant that was available in higher education from the state of Illinois. The grant was used to answer the question “If Illinois were going to have a state virtual school, what might it look like?”

During this same period, there was also some political interest in virtual education from the governor, the superintendent of the Illinois State Board of Education, and the head of the Board of Higher Education. The planning grant was received for \$30,000, and with the help of the political interest, pushed the virtual school movement forward. A state-wide steering

committee was formed, making the committee as representative of educational entities in the state as possible. Funding was announced in November of 1999 and by June 2000, a strategic plan had been developed. The state Board of Education gave approval to launch IVHS no later than January 2001. “The mission of IVHS is to use new and emerging technologies to expand the boundaries of space and time to provide Illinois students and teachers with increased equity and access to the highest quality educational opportunities. It is IVHS intent to deliver high-quality courses aligned with Illinois Learning Standards” (<http://www.ivhs.org>).

After the planning grant was received, a steering committee was formed. This group identified several elements of virtual schools that needed to be addressed prior to accepting students. These elements included overall goals and divided these goals into ten focus areas (see Appendix F). The focus areas were intended to touch upon every aspect of virtual learning and provide a comprehensive view of the program for all stakeholders. Some of the key focus areas related to curriculum, assessment, and professional development. The strategic plan identified key personnel responsible, target dates for completion, and projected costs.

The organizational structure of IVHS was determined at the political level. In Illinois, there are three educational agencies, one for K-12, one for community colleges and one for the rest of higher education. Since this is a K-12 program, it was decided the Illinois State Board of Education (ISBE) would have the ultimate responsibility for the organization. Approximately two years into the program’s operation, however, the ISBE found that while they had money for the operation of IVHS, they had no money for staff. At that point, IVHS was outsourced to the Illinois Mathematics and Science Academy (IMSA), one of the groups instrumental in the start up of IVHS. IMSA/IVHS has a very flat organizational structure. There is a director responsible for maintaining the collaborative process among stakeholders to evolve IVHS so that it is able to achieve its goals in a changing world. There is a director of operations who is responsible for general program issues. A coordinator of instructors maintains contact and communication with school officials who participate in the program, and maintains the quality of instruction. The coordinator of curriculum position is currently vacant, but would ultimately be responsible for maintaining the quality of the courses. Regional coordinators of schools offer assistance to schools that participate in IVHS. IVHS enables schools to provide a broader and more flexible curriculum. IMSA is granted funding from the ISBE to fully manage and operate IVHS. All teachers for IVHS are employed by IMSA.

IVHS is open only to students in the state of Illinois. There are approximately 680 public high schools in the state. Of those schools, 70% have agreed to participate in the IVHS with 225 to 250 schools actually enrolling students in any given year. In the spring of 2001, the first year courses were offered, 124 schools in Illinois requested participation in the state virtual school. Of those 124 high schools, 33 schools enrolled a total of 97 students for 12 of the 16 courses offered. IVHS currently offers 90-100 courses each semester and serves approximately 2700-2800 students from across the state of Illinois. The program offers a very broad array of courses with the view that IVHS was created to level the playing field for access to curriculum. Courses offered include a core curriculum in all academic subject areas, general elective classes, AP courses, and credit recovery courses. Of current enrollments, 161 students are enrolled in AP classes. While most classes are semester courses, many of the AP classes are full year courses. In the past several years, IVHS has started branching down to the middle school level, primarily with early level high school courses that might be appropriate for the more advanced middle school student but they also offer some language arts classes at the exclusive middle school level. Students access courses via the eCollege course management system.

Due to the rapid start of the program, at launch IVHS used exclusively pre-packaged courses provided by commercial vendors and other virtual programs. Today the program uses about 50% pre-packaged courses and 50% courses developed by teams of developers who work exclusively for IVHS. IVHS course development is done in a team approach using two content specialists, a coordinator of course development, and a staff member from eCollege, the course management system used by IVHS. This group works together using internal checks and balances to ensure a quality course that meets state standards. A design tool, Syllabuild, is used in the creation of IVHS courses that incorporates state standards to assist in course development. All courses are student-centered. IVHS courses don't necessarily follow a particular theorist, but are patterned on inquiry-based learning. They are seminar-based in that they incorporate discussion boards and activities that promote collaboration. The pre-packaged courses are reviewed by several subject matter experts, taking into account course content and rigor, alignment to state standards, how well the course takes advantage of the features of the learning management system, and technical support (http://www.imsa.edu/programs/ivhs/pdfs/IVHS_eval_sep2005.pdf). Courses are loosely structured around a school semester schedule with some flexibility. Students work within a

window of time, but may take longer or shorter than a traditional semester to complete course work.

The educational goals of IVHS are to provide equal access to courses for students across the state of Illinois. For the state of Illinois, online education has become a viable alternative for students because resources can be shared across schools. This allows schools to expand their course catalogs without hiring more teachers, which can be a financial burden. IVHS can offer services to schools with other problems not related to teacher expertise or financial constraints. Alternative schools are heavy users of the state's online educational program.

IVHS courses are seminar-based utilizing discussion boards to allow for exchange of information, content discussions, and collaboration with classmates and instructors. IVHS teacher expectations are that they must maintain contact with students and school personnel. Teachers maintain contact with students in several ways. All IVHS teachers have access to Elluminate – a provider of Web conferencing, instant messengers, in-course chat rooms, email, and telephone and most teachers use all or most of these methods of communications. Further expectations are that student inquiries are answered within 48 hours, grades are updated weekly, and there is some sort of synchronous contact with students on a twice monthly basis. IVHS courses can accept up to 50 students per course. If more than 50 students enroll in a particular course, permission must be obtained from the teacher. Asking a teacher to take on more than 50 students in a course is a case-by-case decision and would only be done if the teacher of the course is deemed to have adequate time to serve the additional students, meaning that they are not a retired teacher or they do not have additional face-to-face teaching duties.

Courses offered through IVHS can be modified to accommodate student needs but modifications must be approved by IVHS administration. When two or more teachers teach the same course, efforts are made to ensure that teaching is consistent so regardless of which section a student enrolls in, the experience will be the same. This is done through creating a set syllabus and resources used by all teachers of the course. IVHS teachers surveyed reported that they try to keep their course as up-to-date as possible.

Enrollment is open to any student in any school in the state of Illinois. Home schooled students in the state can also take courses through IVHS as long as they are willing to pay the associated tuition. As long as spaces are available, any person in the state may take a course through IVHS.

IVHS operates on a budget of \$1.45 million from the state of Illinois. An additional \$500,000-\$600,000 is generated from enrollment fees from the participating schools. The current enrollment fee is \$225 per semester enrollment and \$175 for summer school. There are scholarship arrangements based upon free and reduced lunch program guidelines that allow schools to enroll students at a lower tuition rate, or allow individual students to receive free enrollment. IVHS is not a diploma-granting institution. This funding model does limit enrollment to some degree as only a fixed number of students can be served by the program.

Faculty development for IVHS teachers begins with the application process. Potential IVHS teachers must complete a 4-week online course followed by a 3-day face-to-face professional development experience. During this professional development process, neither the potential teacher nor IVHS has made any commitment to any ongoing relationship. IVHS covers the costs of the professional development but is not obligated to hire the teacher upon completion of the process. Once hired by IMSA, there is a five day face-to-face professional development meeting during the year – two Saturday sessions and a 3-day session following the 4-week online course held in June. At each of the 3-day session, current IVHS teachers are in attendance in order to develop a mentorship relationship with the new online teachers. In the early days, the mentorship was more about helping new teachers and while that aspect of the mentorship process is still present, the mentorship component is now organized more departmentally. The mentorship allows for less formal professional development to occur throughout the year.

All teachers are Illinois state certified/licensed. In some unusual circumstances, a teacher may teach a course outside their certification/licensure field, but only in a team teaching situation. Teachers have degrees varying from bachelor's degrees to Ph.D.'s with 1-35 years teaching experience. Teacher retention is fairly high with many teachers who have been with the program for five and six years. Teachers are employed as adjunct faculty by Illinois Mathematics and Science Academy. Many faculty members teach IVHS classes in addition to full time teaching duties in a public school or university.

From the teacher perspective, the professional development experience has been good. One teacher commented "It was an experience I'll never forget, both good and not so good." Another teacher said that the training included "lots of information that has benefited me as an online instructor." The mentorship process received high marks from teachers. Teachers who have been with the program for a while now serve as mentors to others. "At the beginning of

IVHS when I started, we did not have official mentors, but we did a lot of collaborating with other IVHS faculty members, helping each other.

IVHS uses quality control benchmarks to assess courses and its overall program. Course benchmarks were patterned after quality control procedures used by IMSA, University High School, and the National Board for Professional Teaching Standards. Program benchmarks are related to course completion rates, school participation, and regular external evaluations of the program. Course surveys are done of every course looking at satisfaction with the course, satisfaction with the teachers, and satisfaction with the program. A yearly survey of participating schools has been done for the past two years looking at satisfaction and discerning the needs of the schools for future course offerings. IVHS also uses outside evaluators, such as Evergreen Associates, from time to time to ensure that their internal evaluations are consistent and accurate.

Each teacher also goes through a yearly formal employee evaluation. Teachers who score poorly in the formal evaluation process are put on an improvement plan. This plan generally involves putting the teacher into a team teaching situation. This is where the mentorship part of the program really works well. In the team teaching situation, some of the stress of teaching online is relieved and the teacher gets the opportunity to work with a mentor teacher to improve their ability to teach online. If this fails to improve the teacher's ability to teach online, they are no longer employed by IVHS.

Lawrence Virtual Secondary Program (LVSP)

The Lawrence Virtual Secondary Program (LVSP) is operated by the Lawrence (KS) Unified School District #497. The Lawrence Virtual School (LVS) is a relatively new program, having only been in operation for three years. LVS began as a K-8 program and the school's website boasts that it is the only online K-12 program in the state of Kansas.

The city of Lawrence is located in northeast Kansas, 41 miles southwest of Kansas City. The population, according to the 2000 Census is approximately 80,000, making it the sixth largest city in the state. Lawrence is the home of the University of Kansas and Haskell Indian Nations University (<http://www.wikipedia.com>). The school district serves approximately 10,000 students in 16 elementary schools (grades K-6), four junior high schools (grades 7-9), and two high schools (grades 10-12) in addition to the virtual school.

The decision to start a virtual school began with a request from group of Lawrence, Kansas citizens who were homeschooling their children and requested educational support. This group suggested a virtual school and the district decided to research the possibility. Following completion of the research on virtual education and an assessment determining the need for a virtual school, it was decided there was enough need and interest to pursue such an endeavor. The district applied to the state and received a charter school grant which was used to start the virtual school. A year after starting the K-8 program, the secondary program was added to the virtual school. At the recommendation of the Kansas Department of Education, LVSP is operated as a program under the Lawrence district's K-12 charter, not as a separate school.

For enrollment purposes, the Lawrence Virtual School, of which LVSP is a part, is set up as a regular school within the district. It employs its own administrative staff, has its own building, and hires and evaluates its own teachers. All school district policies apply to the virtual school. Six LVSP teachers also have duties in brick-and-mortar schools, but the remaining teachers teach wholly through the virtual school, never stepping into a brick-and-mortar school building.

The administrative staff is led by a principal and an assistant principal, however these titles correspond only slightly to the traditional job descriptions of principal and assistant principal. The principal and assistant principal are considered specialists in virtual education. The personnel who fill this position play the role of advisor, counselor, mentor, registrar, disciplinarian, curriculum director, and business manager.

LVSP serves a variety of students. An open enrollment period is held in the spring and summer where enrollments can come from across the state of Kansas. Students taking classes through LVSP come from the full time homeschool environment, the private school environment, and the traditional school environment. Students can earn their high school diploma through LVSP without ever stepping foot into a brick-and-mortar school. They can also complete the qualified admissions for Regents. Approximately one-third of LVSP students are located within the school district, the other two-thirds come from throughout the state of Kansas. Many of the enrollees take one or two classes through the virtual school and the rest of their courses in their brick-and-mortar building so that they can participate in sports and other traditional school activities. Students can be administratively placed with LVSP, meaning they are referred from one of the two high schools in Lawrence as an alternative to traditional

education. If the student is a full time student and lives within the school district, the virtual school provides a computer for the student to use, otherwise students provide their own computers.

LVSP offers both course acquisition classes and credit recovery classes. Course acquisition refers to courses necessary to meet graduation requirements. Credit recovery courses are for students who have failed a regular course in their traditional school and need to make up the credit in order to graduate. Nearly all of the course acquisition courses are pre-packaged courses provided by several vendors: Apex, Aventa, and Greenbush. Greenbush is a program offered through the Southeast Kansas Regional Service Center which offers educational multimedia resources for member school districts. Apex Learning is a nationwide vendor of online courses. It is located in Seattle, WA. Aventa is a provider of online courses for K-12 students. It is located in Maryland. One course, a newspaper course, was written by the instructor. Students and parents of the district are regularly surveyed regarding what courses might be desired with efforts made to provide those courses. At the present time, there are no AP offerings by LVSP because there has not been a demand for such courses. Another reason AP courses are not offered by the program is that the staff is not certified/licensed to teach AP classes. If the constituency of LVSP ever starts requesting AP courses, efforts will be made to obtain the staff in order to provide the requested courses.

Courses are meant to be structured, but because the program is only two years old, they are learning as they go. In the program's first year, the philosophy was "any time, any place, any path, any pace" allowing students to work through the courses at their own pace. However it was discovered that this was not practical as students did not complete semester courses by the end of the semester which poses a problem for the teachers. LVSP teachers are covered under the district's teacher collective bargaining contract. This year, deadlines have been placed in courses, however those aren't working so well either. One option LVSP is considering for the future is contracting with students and parents, giving them three options for course completion: weekly due dates, unit due dates, or semester due dates.

The credit recovery portion of LVSP is a separate part of the program. Credit recovery courses are set up to be completed in 18 weeks. If students do not complete the course in that time, the enrollment simply rolls over to the next enrollment period until the student completes the course. Credit recovery courses are taken through the two Lawrence high schools in a study

hall type class with students enrolled in credit recovery for one or two class periods of their regular school day. The high school staffs the classroom with staff members receiving training from LVSP on the course management system and how the courses are conducted. The high school staff then trains and supervises the students in the credit recovery courses.

When students enroll in classes with LVSP, the administrative staff meets with the student and parents to discover why the student wants to enroll in the virtual program. Discussions relate to course requirements, graduation requirements, type of enrollment (full or part-time), and reason(s) for wanting to enroll in LVSP. Students are free to take as many or as few classes through LVSP as they wish, but if they are diploma-seeking students, they are advised that failing or dropping a class could put them behind in their academic plan. This year, the school had a traditional “first day of school” and all the students came. During this day, students met with their virtual teachers, met other students in their classes, and participated in orientation. This orientation included going over school rules, class rules, and general expectations, as well as how to access and maneuver through the online classroom. Parents were invited to come on an optional basis, but future recommendations are that attendance be mandatory to orient parents on such things as parent expectations, how to log in as their student, check their student’s progress, and contact faculty.

When looking for staff for the LVSP, the administrators look for good teachers, teachers who love kids and love teaching. Teachers who have experience in the classroom are preferred, but the LVSP does have one teacher who is in her first year of teaching. The majority of teachers in the program have 5-6 years classroom experience before coming to the LVSP. LVSP faculty members are employees of the district and assigned to the virtual school for part or all of their teaching day. They are subject to all terms and conditions of the district’s union contract. No additional stipends are paid to LVSP faculty.

LVSP has no formal faculty development process but takes steps to ensure that teachers feel prepared to teach online. For the four core faculty members, no formal faculty development was in place prior to their stepping into the virtual classroom. The teachers were given training on how to use the courses and classroom management system from the vendors whose classes they are teaching. Four of the 15 faculty members of LVSP are participating in a new professional development program started by Florida Virtual School this year. Through this program, teachers participate in a monthly online discussion related to such topics as motivating

online students, time management for online teachers, academic integrity, and helping English-language learners (ELL).

Although they have had little formal professional development, LVSP teachers work very closely with one another. The core teachers all stated that they felt very well supported by both the principal and assistant principal, as well as their fellow teachers. One teacher commented that the core teachers work closely together to talk and bounce ideas off each other on a fairly regular basis. Another teacher commented that during the first year of operation teachers spent a considerable amount of time collaborating. Questions such as “This is what appears to be happening, what should we do?” were often asked and ideas passed back and forth. This collaboration has worked very well for all the teachers at LVSP and continues to be a major source of support for the teachers.

The quality control process at LVSP relies on administrator and faculty expertise to ensure that courses meet the needs of the students in the district and state curricular standards. Because the program is so new, quality control measures are constantly being reevaluated, as is curriculum. The district uses a focus group of parents, students and teachers who meet to discuss how to grow and improve the quality of the education offered by LVSP. The administration has reviewed every course currently offered by the program to ensure that it meets the state’s standards before purchase of the course. In addition, the teaching staff evaluates the courses and activities within the courses they teach. Although the course content cannot be directly edited, the staff is free to modify the content, direct students to do an assignment in another way than described in the lesson, delete or add lessons as appropriate, or change point values for assignments. Administrators and staff have also used contacts made at conferences related to virtual education to find out about new courses or tips and suggestions for teaching courses that are passed on to the rest of the faculty of LVSP. In addition to these measures, the Kansas Department of Education is currently conducting an audit of all virtual schools and programs across Kansas to ensure quality of education in these programs. LVSP administration remains in close contact with the school district administration about the operation of the program.

School funding in the state of Kansas comes from three sources. One source is state aid based on a full time equivalent per student count. This money is sent to the district and the district then forwards it to LVSP. The amount of state aid that LVSP receives for the 2006-2007 term is \$4317 per student which is the base state aid. The second method to fund schools is a

local options budget (LOB). The money for the LOB comes from property taxes collected. This money can be used for any aspect of the budget except salaries. The money passed to the school is based on a per student count and a percentage of the money that the district receives from the state. This year, the school received \$600,000 from the LOB. The third way that LVSP is funded is through a per student fee. Each student, regardless of the number of classes they are taking, pays the school district a fee of \$97 which then is passed back to LVSP. The LVS/LVSP is responsible for paying their own utilities, building rent, technology, curriculum and salaries from these allocations.

Lawrence Virtual School/Lawrence Virtual Secondary Program is a school district program started by the Lawrence (Kansas) Unified School District #497. The program serves students from across the state of Kansas, whether they are homeschooled, in private schools, or public schools. The courses are offered using over the Internet allowing any student who can obtain Internet access to take courses. Students can take all the courses necessary to fulfill state of Kansas' graduation requirements.

Analysis of Findings

Data Collection

Interviews were conducted with administrative personnel via face-to-face, telephone, and email interviews. This information was used to create the case descriptions found earlier in the chapter. Administrative personnel for each program referred me to individual teachers who were contacted via email or in person with numerous follow up email contacts to obtain complete ideas and relevant information, as well as clarification. Each individual case description was returned to administrative personnel for review, clarification, and accuracy of the case account with the case description being revised as appropriate.

Data Analysis

The study focused on looking for characteristics of the online programs that provided an indication that there were elements of quality of instruction. Upon review of the research questions, question 3, relating to quality assurance procedures was determined to be a subquestion of the first research question: What attributes indicate quality of instruction in an online high school program?

Data were analyzed for each individual case using a method Creswell (1998) refers to as direct interpretation of the data. Through the direct interpretation method, I was able to view each program as an individual instance of data and to attempt to draw meaning for each individual case. This method allowed for the descriptive account of each program found in the previous chapter. Themes and sub-themes were developed from the data by determining what was important to each organization through the emphasis placed on it during the interview process and the number of times it was mentioned in the data. These themes and subthemes will be presented in the section Coding Techniques.

According to Merriam (1998), “a qualitative, inductive, multi-case study seeks to build abstractions across cases” (p.195). By comparing the themes from the individual cases across all three programs, I was able to gain an understanding for why the programs operated the way they do. It also allowed for a better understanding of the individual circumstances of each program and how those circumstances shaped the program.

Triangulation of the data occurred in several ways. Comparing the data collected through interviews to outside information such as employee handbooks/procedures, outside evaluation reports, and program web site added to the case descriptions and triangulation of the data. A comparison of the data collected across the groups interviewed to see if the parties answered the same questions in a similar manner was used. This data was also compared to the data collected from the teachers and review of the literature, as available. The second method was to send the completed case descriptions to several of the administrators of each program for review. The administrators reviewed the case descriptions, made comments and suggestions. Those comments and suggestions were further compared as a method of triangulating the data. Changes to the case descriptions were made as suggested by the administrators and the comparison of the responses. Information from the teachers was verified for accuracy of content with clarifying questions, but teachers were not involved in the member-checking portion of the data analysis or editing of the case descriptions.

Coding Techniques

Interview transcripts were compiled by grouping all the answers from the administrators and teachers from each organization into one document; for example, all answers to question 1 were put together, all answers for question 2, and so on. Excerpts from the transcripts related to

several of the themes can be found in Appendix G. Referencing the research questions while reading through each response, themes and subthemes were created revealing what each organization felt were important attributes in maintaining quality for the program. Items mentioned more than once relating to the first and second research questions were coded as important to the organization’s success and contributing to overall quality.

Research Question One Analysis

Themes and subthemes were culled from the data related to the first research question and its subquestion: What attributes indicate quality of instruction in an online high school program? How do online programs assure quality of instruction the courses they offer? These themes were slightly different for each individual organization and are illustrated in the table below. Themes relating to issues each organization felt were important in maintaining quality of instruction and quality of program are listed in alphabetical order with subthemes being indented beneath the corresponding theme.

VHS

Table 4-1 Major themes and subthemes from administrators of Virtual High School

Centralized/teams
Collaboration/resource sharing
Courses
Structure and flexibility
Standards-driven
Feedback loops
Professional development
Quality control
Service
Teachers
Teacher proficiency
Uncertainty

Centralized/teams

VHS operates using a centralized staff. This is evidenced by the fact that central office is organized around five teams with each team responsible for different aspects of the operation of the program. Teachers for VHS are employed by the school belonging to the consortium and not directly by VHS. VHS has a board of directors because it has been incorporated as a nonprofit organization. Each year VHS staff and board of directors meet for strategic planning. During this planning goals are reviewed and discussions relating to how and whether those goals were met are carried out with new goals formulated for the next year. This structure allows VHS to operate efficiently and keep membership costs low.

Collaboration/sharing resources

Collaboration is a very important part of the VHS operation. This theme was mentioned in relation to several of the themes listed above. Collaboration occurs in a number of areas throughout the VHS program. In relation to the entire program VHS sees itself as “an ally and collaborator with schools”. VHS shares resources across its membership in the form of teachers and students. Collaboration for new VHS teachers begins in the course writing process. Teachers come together in the TLC and NIM and work together to build a NetCourse. Peer review and use of discussions throughout the TLC and NIM courses assist in helping the teachers write curriculum that meets VHS and national curriculum standards. Because TLC and NIM are conducted online, teachers get an understanding of what their students go through when they first enter the online classroom. A mentoring process also allows for sharing of resources and collaboration between a new online teacher and an experienced one.

Collaboration is an important part of the professional development process even after completing TLC and NIM. VHS has instituted a continuing professional development process called COVE. COVE stands for Community of Virtual Educators. COVE is accessible to all online teachers in the Blackboard (Bb) learning system. COVE allows VHS teachers to post suggestions and requests for professional development, or to post suggestions and shortcuts they have found useful. This area allows for a continued sharing of resources among VHS teachers as well as just-in-time professional development opportunities.

In addition to collaboration during the course writing and then following that as part of COVE, teachers who teach the same content are able to work together through shared work spaces created by the VHS administrative team. Teachers of the same courses are provided a

collaborative work area to share content knowledge and questions that arise. The mutual work space is created to ensure that students in the same course taught by different teachers receive the same general educational experience.

In addition to the collaboration that occurs among teachers, collaboration between students and teachers has been built into every VHS NetCourse. Use of discussion forums, personal pages, and personal and group threads allows students and teachers to work together to personalize the learning for each student. These features not only encourage collaboration, but also create the social environment in which learning takes place. The shared space also assists in decreasing some of the geographical distance of the students as mentioned in the literature by Mayer (2003).

Courses

VHS courses cover a range of disciplines and grade levels. This allows member schools to expand their course catalogs well beyond the course catalog of the individual school. Courses are primarily for grades 9-12, but four-week modules in a number of disciplines designed for middle school students have been added to the VHS catalog, as part of the VHS AP Academy.

VHS courses are open to any student in any of the member schools. As part of the mission statement of VHS, is the belief that a quality online education should not be only for those who can afford it or only those who are good at school.

All VHS courses have a somewhat templated structure. The reason behind this aspect of each NetCourse is to create a feeling of familiarity for students who take more than one VHS course. Each NetCourse contains similar documents throughout the course, such as a weekly overview and reflection that give students a preview and they wrap-up for each week. All courses are written based on VHS Net Standards which are based on national curriculum standards and research-based pedagogies.

A subtheme of this category is related to structure inflexibility of the NetCourses. VHS refers to their classes as scheduled asynchronous. The scheduled part is a week to week flow to each NetCourse. The asynchronous part is that students are free to structure their own time within each week. Even though courses are scheduled using a week to week format, there is still some flexibility to extend or shorten deadlines throughout the course.

A second subtheme is that courses are standards driven throughout the writing process. As courses are written they are constantly compared to national curriculum standards as a way to

ensure academic rigor and quality. Feedback loops are used to communicate changes during the writing process as courses are evaluated against those course design standards.

Professional development

Professional development is the first step VHS uses in ensuring the quality of their courses. As previously stated all VHS teachers participate in one of two professional development courses prior to beginning their online teaching career. The TLC is where net courses are written from start to finish. This is a 22-week online program during which the future online teacher learns about online pedagogies while writing curriculum for their course. The 10-week NIM is for teachers who will be teaching a course that VHS owns. During NIM, the future online teachers learn about online pedagogies and become familiar with the courses they will be teaching. All professional development is facilitated by VHS staff and designed to teach teachers to become effective online educators. As previously mentioned, just-in-time professional development occurs in COVE for whatever might be needed such as introduction of new features of the learning management system. COVE topics can also be requested by program teachers. Such COVE topics are: suggestions on how to get the course to load faster, using the gradebook feature more efficiently, and repairing broken images.

Quality control

Quality control is extremely important to VHS. Quality control underlies everything VHS does. Beginning with the course writing process and continuing throughout the entire organization, quality is a running theme. The surveyed administrators made comments such as:

- Indicators of quality
- Start off with course design standards
- Outcome based indicators
- How much value the school is getting

VHS maintains quality benchmarks in three basic categories: course quality, teacher/teaching quality, and program quality. An example of the Netcourse quality benchmarks can be found in Appendix E. The course quality control procedures were talked about previously. Teacher/teaching quality will be discussed later. Program quality looks at everything VHS does.

Program quality control looks at outcome-based indicators as assessment measures. Administrators mentioned the ways in which program quality is assessed such as: obtaining

surveys from teachers, administrators, and students related to such things as satisfaction with the courses, satisfaction of learning outcomes, and student achievement. In addition to surveys administrators talked about the collection self-report data from teachers related to aspects of teaching their courses. Seat utilization rate and contract renewal rate were also mentioned as assuring quality control because this data gives VHS an indication of the value schools receive with their memberships. This information indicates to VHS that if schools are using their seats and renewing their contracts that they do find value in the services VHS has to offer. In addition to internal quality control checks, VHS periodically uses outside evaluators to validate their quality control measures.

Service

VHS feels that it provides a valuable service to its members. Central staff provides information to schools, and assistance regarding its program. The team atmosphere in the central office works hard to ensure participating schools receive the best service available. Weekly communication ensures that teachers and administrators are kept up-to-date. These communications inform teachers and administrators of new topics in COVE, upcoming VHS events and deadlines, and helpful hints from VHS teachers. By providing these basic services VHS increases the value of the program for its member schools.

Teachers/teacher proficiency

This characteristic of quality was the most frequently mentioned by administrators. A quality online program relies on quality teachers. Teachers and teacher proficiency ensures the quality of VHS courses. All VHS teachers are fully certified/licensed in a content area. VHS is quite proud of their claim that 85% have a masters degree or above and include it on their program web site. On average teachers have at least sixteen years of classroom teaching experience and an average of five years of online teaching experience. Because VHS operates as a consortium, all teachers remain employees of member schools.

VHS has high expectations for all teachers teaching in their program. Teachers are exposed to VHS standards throughout the professional development experience. A lot of emphasis is placed on the professional development process in ensuring that VHS teachers are well prepared to meet the challenges of teaching in the Internet-based classroom. This is

evidenced through the following comments from administrators and will be backed up by the teachers later in this chapter:

- PD experience
- High expectations of teachers
- Evaluated in course delivery
- Demonstrated a proficiency in online teaching skills
- We have a level of comfort with their abilities

During their first semester of online teaching courses are monitored and evaluated by members of the curriculum development teams until VHS has a level of comfort with the abilities of the online teacher. Once teachers have demonstrated proficiency in the online classroom VHS begins to monitor courses less frequently. Teacher proficiency is one of the quality control measures VHS uses to ensure the quality of the professional development experience.

Uncertainty

VHS began as a research and development effort obtaining a Technology Challenge Grant from the US Department of Education. The two research questions driving VHS were: 1. Could high school students learn online? 2. What professional development would be required for teachers to be able to teach online? These research questions indicate that there was some uncertainty in a success of a high school online program. Questions were also raised on how such a program would be managed to ensure a quality education. Everything VHS has done since its inception has led the way for other online high school programs reducing some of the uncertainty.

Summary of VHS Themes

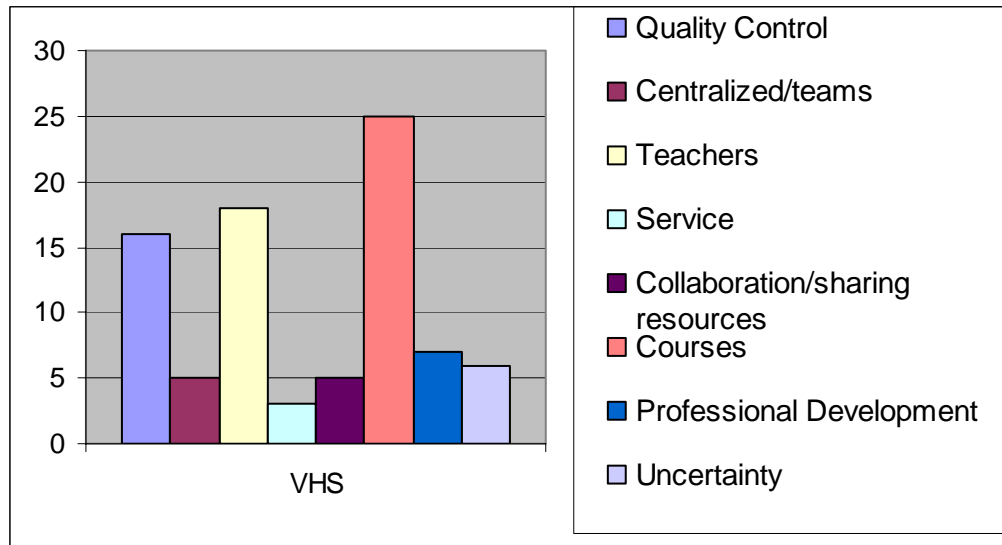


Figure 4-1 Virtual High School: Frequency of responses by administrators

The above figure shows the frequency with which the themes were mentioned by VHS administrators. The individual theme list color key is in the box to the right of the chart, with the frequency reported on the vertical axis. As can be seen in the above figure, many of the VHS administrator responses related to the quality of courses that they offer. Teachers and quality control were also seen as high contributors to the overall quality of program. VHS has a well documented quality control procedure that contributes both to high-quality courses and overall program quality, however their procedures are proprietary in nature and benchmarks and indicators were not disclosed to me, except as listed in Appendix E. A team approach to the management structure of the organization allows for a high level of collaboration and sharing of resources across the program. Although VHS started out with a certain level of uncertainty, their continued operation and growth is testament to their ability to overcome that uncertainty.

IVHS

Table 4-2 Major themes and subthemes from administrators of Illinois Virtual High School

Collaborative effort
Uncertainty
Change
Courses

Course flexibility
Increased educational experiences
Politics
Professional development
Mentorship
Qualified teachers
Teacher retention
Quality control
Evaluation procedures
Voluntary participation

Collaborative effort

IVHS began as a collaborative effort from a couple of different higher education entities in the state of Illinois. This is evidenced through such comments as:

- Collaboration among education and technology entities in the state
- In collaboration with these partners
- Brought together

In 1999, these groups began having conversations about starting a statewide online high school. These conversations soon grew and a statewide steering committee was formed to explore this possibility. This committee was as representative of all stakeholders as possible in an effort to ensure success and acceptance of a virtual school.

One of the first questions that the planning committee dealt with was “If Illinois were to have a virtual school, what would it look like?” Another question was related to jurisdictional control of the virtual school. The planning committee petitioned the state for a planning grant to come up with answers to these questions. By August 2000, IVHS was launched. It was determined that because IVHS served the K-12 student population that authority for its operation would be the Illinois State Board of Education. In January 2001 IVHS opened its doors. Approximately two years later, the state board faced severe budget cuts. Not wanting to discontinue the virtual school, the IVHS was outsourced to the Illinois Mathematics and Science Academy (IMSA). This organization had always been involved in the creation of IVHS and was a good candidate to take over its operation.

Courses

IVHS offers 90-100 courses each semester. The evidence that IVHS intends to offer high quality courses lies in its mission:

The mission of the Illinois Virtual High School is to deliver increased educational opportunities through the Internet and other innovative means for Illinois high school students and teachers. The Illinois Virtual High School intends to deliver high-quality courses aligned with the Illinois Learning Standards as well as other appropriate standards. (IVHS Preliminary Plan, p.3)

These courses range from basic academic courses and electives to advanced placement classes. When IVHS first launched courses were provided by vendors. Today IVHS uses a mix of faculty written and vendor provided courses. Courses written specifically for IVHS are written using a team approach. The team consists of two content specialists, a coordinator of course development, and a staff member from eCollege, the learning management system IVHS uses. Prepackaged courses are reviewed by subject matter experts prior to approval for use to ensure that the courses meet Illinois state curricular standards.

Course pacing for IVHS classes varies. Because schools across the state have variable schedules, most courses have groups starting together based on school start dates. All courses have a schedule roughly corresponding with a regular academic calendar. IVHS courses are seminar based and take advantage of such features of discussion boards, group threads, and synchronous discussions in the chat rooms.

Increased educational experiences

As stated above, the primary mission and reason for starting IVHS was to provide increased learning opportunities for Illinois students for access to curriculum. IVHS administrators mentioned “supplement”, “level the playing field,” and “provide increased opportunities to learn for Illinois learners”. Many of the state's alternative schools enroll students in courses through IVHS. In the past two years, IVHS has also started offering courses for middle school students.

Politics

During the time IVHS was in its planning stages, the steering committee received much support from the governor, state superintendent, and head of the Board of Higher Education. This political support helped get IVHS off to such a fast start. The initial decision to place IVHS

under the jurisdictional control of the State Board of Education and its subsequent outsourcing to IMSA was made at the purely political level. Without this political support, IVHS may never have gotten the support it needed to become a viable institution.

Professional development

All IVHS teachers are considered adjunct faculty and hired by IMSA. Potential teachers go through a six step process (see Appendix G). Potential teachers are identified based on nominations for teaching awards, recommendations from current IVHS teachers, or direct contact with IVHS expressing interest in becoming an online teacher. Prior to hiring, all potential IVHS teachers complete a four-week professional development course. This 4-week course covers such subjects as online methodologies and mechanical issues, as well as specifics related to IVHS such as contact techniques and record keeping. The professional development process was described as an “honest discovery” process by VHS administrators, “trying to discover ‘are you right for us’ and you are discovering if online teaching is for you”. IVHS mentors observe participants during this process. Potential teachers take this course at no charge allowing them to discover if teaching online is a good fit for them and their teaching style. Following completion of the online portion, a three day face-to-face event is held during which time potential teachers meet with experienced teachers to complete the initial process.

Mentoring of new online teachers is an important part of the professional development process. Mentorships are organized along departmental lines with experienced IVHS teachers mentoring paired up with a new online teacher. It is the mentor's job to monitor courses and provide support as needed. The mentorship also allows for informal professional development to occur as needed.

Qualified teachers

All teachers for IVHS are Illinois-state certified/licensed in their content area. Many are nationally board-certified. Experience ranges from one to 35 years classroom teaching experience. IVHS teachers are hired as adjunct faculty; some work full-time in brick-and-mortar schools, some are retired, and some only want to teach part-time. A large number of IVHS teachers have been teaching for the program since the program started in 2000.

Quality control

IVHS uses an established evaluation process to ensure quality of program and courses. Benchmarks for quality control are primarily related to student outcomes and participating school satisfaction. Because participation in IVHS is voluntary, if the program weren't providing quality learning experiences, schools wouldn't continue to enroll students in the program. Teachers for IVHS undergo a formal employee evaluation every year. IVHS also uses an outside evaluation from time to time to verify internal evaluations and provides suggestions and validation to the quality control process.

Summary of IVHS Themes

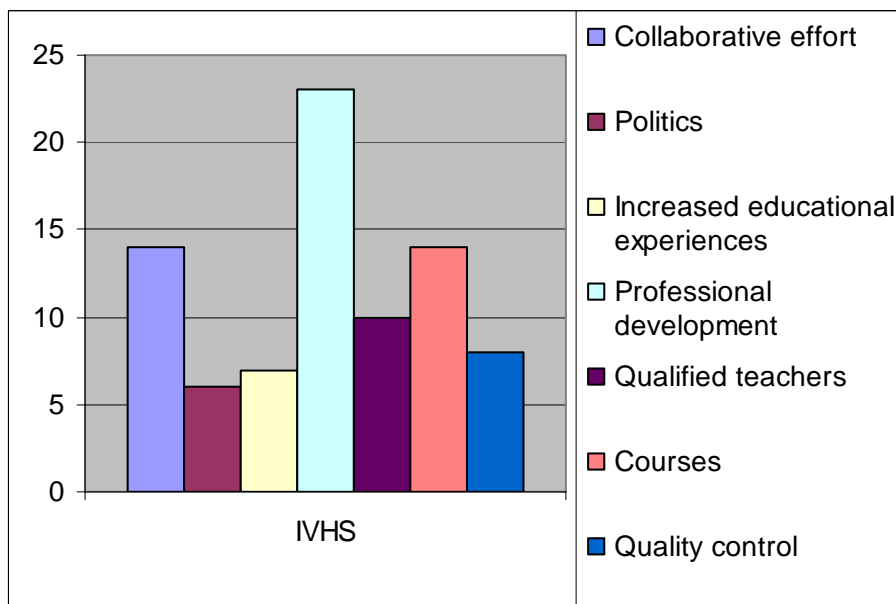


Figure 4-2 Illinois Virtual High School: Frequency of responses by administrators

The above figure shows the frequency with which the themes were mentioned by IVHS administrators. The individual theme list color key is in the box to the right of the chart, with the frequency reported on the vertical axis. As can be seen in the above figure, IVHS administrators feel strongly that the professional development process is a major contributor to overall program success. A strong professional development program leads to a highly effective teaching staff. Courses and collaborative efforts are also felt, by IVHS administration, to be strong indicators of quality. It was interesting that IVHS felt political muscle was worth mentioning as an indicator of quality and success of the program.

Table 4-3 Major themes and subthemes from administrators of Lawrence Virtual Secondary Program

Communication with outside sources
Courses
Flexible staff
Learning curve
Quality control
Service/support
Teachers

Communication with outside sources

LVSP is a relatively new program, currently in its second year of operation. Administrative staff and teachers actively spend time while attending conferences to network with other teachers and administrators and course vendors to find out about curriculum providers and programs that are available. This is done not only to find out what is available, but to assist in decision-making for the program.

Courses

LVSP was an addition to the Lawrence Virtual School, a K-6 virtual program started to offer educational support to homeschooled families. It initially began by providing summer school classes for the Lawrence school district. The success of the summer school program led LVS to start the secondary program a year earlier than expected. LVSP offers a range of courses from acquisition courses which are regular academic courses to electives to credit recovery and summer school classes. At the present time LVSP has no advanced courses. The reasoning behind this decision is because there has been no expressed need for such classes and a lack of qualified teachers for the advanced courses. Nearly all LVSP courses are provided by vendors. All courses are reviewed by administrative personnel and faculty before purchase for use with students.

Flexible staff

LVSP has a rather small staff consisting of two administrators, 15 teachers, and a small support staff. For this reason many on the staff have to wear “multiple hats.” The program

administrators fill the roles of counselor, administrator, disciplinarian, registrar, and business manager. Teachers fill a traditional teacher role in addition to content expert and curriculum developer.

Learning curve

As previously stated, LVSP is a very young program having only opened its doors in the fall of 2005. They are learning as they go about every aspect of online learning. Some particularly difficult issues being faced by LVSP are professional development of their staff and course structure.

Quality control

Quality control at LVSP relies on administrator and teacher expertise. LVSP highly values this expertise and experience as evidenced in the following quotes:

- Staff
- Quality staff
- High quality, very capable, bright, innovative
- Rely on them to analyze

All courses are reviewed by the administrators and faculty to ensure courses will meet student needs. Because LVSP does not write their own curriculum, they are always looking for high-quality courses to use in their program. This requires faculty and administrators to constantly evaluate curriculum. LVSP relies heavily on staff expertise to fulfill their quality control duties. At the present time LVSP does not use outside evaluators, however the state of Kansas is currently auditing all virtual charter schools as a condition of continued grant funding..

Service/support

LVSP was founded on the basis of providing educational service and support to students in Lawrence, Kansas. Although they are a school district program, only one third of the students enrolled in courses live in the Lawrence area. Students from across the state of Kansas are able to take classes on either a full or part-time basis. When potential students approach LVSP about the possibility of enrolling, administrators meet students and parents to discuss whether virtual classes are right for the student. LVSP has a traditional first day of school during which students come to the administrative building and spend the day meeting teachers, shown how to use their e-mail, how to log into their course, and how to navigate through their course. General

expectations are also communicated at this time. Students taking classes full-time through LVSP receive a computer for their use in taking classes.

Credit recovery courses are conducted through LVSP but students are enrolled as traditional students at one of the two high schools in Lawrence. High school staff members monitor students in the computer labs during one period of their school day. The high school staff members are trained to navigate the course management system and they in turn train and monitor the students. Additional training by LVSP staff is always available.

Teachers

LVSP teachers are employees of the school district and as such are subject to all district policies. All LVSP teachers are Kansas state-certified/licensed and are teaching in their content area. Administrators look for teachers who love kids and love teaching because these are the teachers who will be successful in any type of classroom. LVSP also looks for five to six years of classroom teaching experience. Many of their teachers have been teaching in the online secondary program since they started. The program does have one brand new teacher who has no previous classroom experience. As previously stated LVSP relies heavily on their teachers’ expertise not just in teaching but also in evaluating and recommending curriculum.

Summary of LVSP Themes

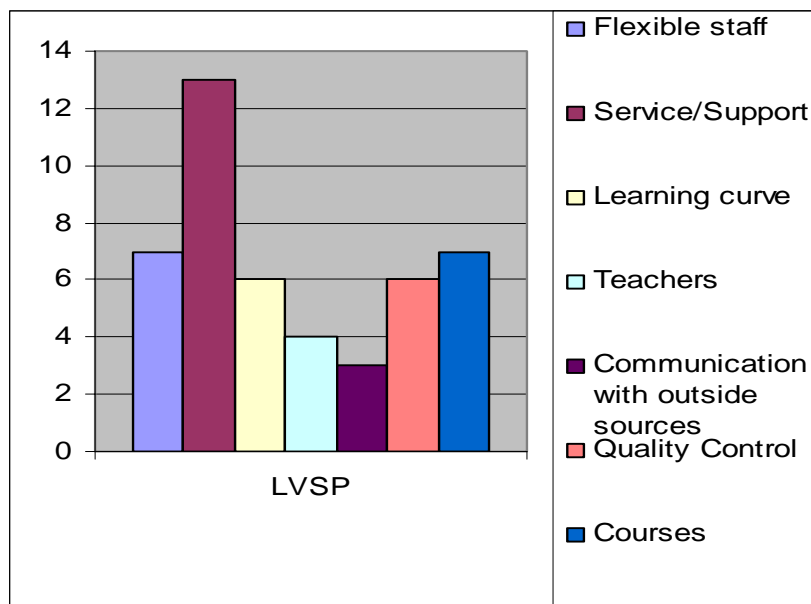


Figure 4-3 Lawrence Virtual Secondary Program: Frequency of responses by administrators

The above figure shows the frequency with which the themes were mentioned by LVSP administrators. The individual theme list color key is in the box to the right of the chart, with the frequency reported on the vertical axis. As evidenced in the above display, LVSP feels strongly that they provide a service and support to the district’s students, both traditional and homeschooled. Having a quality and flexible staff teaching their courses is also important. The fact that the program is so new could explain why the program relies heavily on staff expertise and communicating with outside sources as ways to find out about vendors and courses to ensure quality of program and instruction.

Research Question Two Analysis

In order to answer question two, comparison across cases was necessary to answer the second research question: What characteristics do these three successful online high school programs have in common? Themes mentioned by at least two programs are included in this analysis of common characteristics. Even though the themes are different, there is some overlap between them as shall be evident in the following analysis of each theme. The following table lists the common themes across programs.

Table 4-4 Common themes across participating programs

Collaboration
Courses
Professional development
Quality control
Teachers

Collaboration

This first theme was a theme for VHS and IVHS as a program, but not in the theme list for LVSP. Even though it was not a theme for LVSP as a program, collaboration was evident based on the teacher interviews. Collaboration for all these programs was mentioned in reference to: Working together to write curriculum, collaborating with schools to provide educational opportunities, and sharing resources such as experienced teachers in order to meet educational goals. Collaboration within courses was another important factor contributing to the overall success and quality of instruction.

Collaboration fits with the idea that more can be accomplished when people work together rather than alone. For VHS and IVHS, collaboration began in the planning and implementation of the programs. A group of people came together believing that high school students should be afforded the opportunity to expand their educational opportunities and worked together with government agencies in an attempt to make it happen. For LVSP, a group of parents in the district came to the district as a group asking for educational support which prompted the district to begin looking at virtual schools as a way to meet the needs of students in their district.

Online programs are not trying to take the jobs from teachers and administrators, but to work with those groups by providing a service to them. Sharing resources such as teachers and courses that might be unavailable to schools due to lack of teachers or sufficient student interest to offer such a course is a definite plus for schools (Gagne & Shepherd, 2001; Donlevy, 2003). Many small schools across the country lack the resources to provide enough qualified teachers to offer much more than the basic academic classes. Support for this sharing of resources is indicated in the following quote:

“I have 14 students from a small, rural school who all meet in the library’s computer lab to do this course. Their Consumer ed teacher retired and the school is using IVHS as a less expensive alternative to hiring another teacher.”

This account lends support to the notion that online education can be successful in sharing resources across schools and collaboration can be a good thing.

Collaboration fits with social constructivist teaching methods. We do not learn in isolation, we learn in a social environment and that social environment allows us to test, reformulate schemata, and retest our knowledge until we have formed schemata that will help automate our learning (Cheung, 2006; Blanton, 1998). Palloff and Pratt (1999) are strong advocates of creating a community of learners which helps to create the social environment in the online classroom. When online students work together as a community of learners, they are able to collaborate across geographic and time boundaries without feeling a sense of isolation that can occur in online classes (Twigg, 2003).

I firmly believe technology is changing the world in which we live in. No longer are we bound by our geography and clocks. For today’s students to compete in the 21st century, they need 21st century skills. The ability to collaborate across time and distance is just one of the

skills they will need. Incorporating collaboration as a skill builder in the Internet-based classroom will help students develop the “generic skills” to transfer their learning to new and novel situations. The ability to collaborate and develop those skills definitely contributes to the overall quality of these programs.

Courses

Having high quality courses is probably the backbone of a quality educational program. Too many students are taking courses that are substandard, designed to bring revenue to the provider. As the demand for online programs grows, I think that we shall see more and more programs that are not meeting the needs of the students, but meeting the needs of the stockholders and entrepreneurs. All three of these programs strive to provide high quality courses for their students. What was interesting was the way each program carries out this function.

VHS starts with certified/licensed teachers writing curriculum while participating in a graduate level professional development course. All courses are built under the direction of faculty advisors who facilitate the online professional development course. During this course, teachers writing the course are becoming familiar with online pedagogies and VHS curriculum standards which are based on research-based and national curricular standards. Courses are designed using a template so that they have a definite and consistent structure to them. This structure helps communicate to students the expectations and familiarity that will help them to be more successful. Teachers write curriculum that includes ample opportunities for discussion of the concepts and collaboration with classmates and the teacher.

VHS courses have a week-to-week flow to them with some flexibility depending on the course and the teacher. Definite deadlines keep the flow of the course moving. The decision to use a structured flow is based on research, but the decision was made so long ago that they cannot reference the research so that I could find and report it here. In my own experience, I would think that structure and deadlines would be more conducive to collaboration and discussion when all the students have come together as a community of learners and are working on the same concepts at the same time. When students get behind, they miss much of the interaction that occurs in the discussion boards and also the potential to find an avenue that they might want to explore more deeply.

IVHS uses a team approach to building their courses. The team consists of two content experts, an instructional designer, and a staff member employed by the learning management system they use. Courses are based on Illinois state curriculum standards. Courses written specifically for IVHS also follow a templated design process. This facilitates students becoming familiar with the interface, as well as the course expectations.

IVHS does not have a strict week-to-week flow for their classes. IVHS serves schools across the state of Illinois, and therefore students participate according to their regular school calendar. Attempts are made to group students together so that some collaboration and discussion can occur during the duration of the course.

LVSP uses vendor-provided courses. I got the impression that they were not very satisfied with the quality of the courses, but this is where their reliance on their teachers and the teacher expertise comes into play. Because the teachers are familiar with Kansas state curricular standards and the online courses they teach, they can improve on the overall quality of the courses by making modifications and suggestions as the students move through the courses. I also got the impression in talking with the teachers and administrators that the courses did not take advantage of features of the learning management system like discussion boards within the course. The teachers did use chat rooms and instant messengers in an attempt to hold discussions and increase the collaboration in the classes. Several of the teachers expressed interest in wanting to use their knowledge and expertise to write courses that would better meet the needs of the students participating in LVSP.

Without quality courses, there cannot be a quality of instruction that would ensure academic rigor and high standards for education. Each of these three organizations strives to provide high quality courses and I think they are fairly successful in doing so. VHS and IVHS have both been around long enough that they are over the learning curve that LVSP is still facing. As LVSP gains experiences and becomes more popular, they should be able to provide a high quality learning experience for their students.

Professional Development

Professional development was primarily mentioned in terms of overall program by VHS and IVHS, however the teachers at LVSP put some emphasis on it as well. Teaching online requires a paradigm shift for teachers from that of provider of knowledge to being a facilitator of

learning (Barker, 2003). Teaching in the Internet-based classroom requires teachers to develop new skills. For this reason, a chance to develop such skills in an appropriate, supportive environment helps teachers to be able to make this shift (Palloff & Pratt, 2000). An online professional development class is most conducive to teaching teachers how to teach online. By becoming online students themselves, the teachers experience some of the same difficulties and frustrations that their students could face when they first enter the Internet-based classroom. They also have the possibility to learn how to use technology more efficiently in their face-to-face classes as well. This is a powerful way to learn about teaching and learning in an Internet-based classroom.

VHS and IVHS both rely on an Internet-based professional development program. VHS has the more comprehensive of the two programs with their 22-week TLC or 10-week NIM, but IVHS has a more visible mentorship process and a face-to-face component to their professional development program. The teachers at LVSP, however, felt that they were sort of thrown into the fire when the district first implemented their online program. Nevertheless, because they collaborated on a daily basis, they were able to adapt to their new teaching positions and make the adjustment from the traditional classroom to the Internet-based classroom.

Quality Control

Quality control measures are important for overall program quality. Quality control measures that are tied to the program's mission and goals can provide assurances to potential members that the program can substantiate their claims of quality.

Of the three programs participating in this study, the most extensive and strict quality control process belongs to VHS. Quality control starts in the course development process and is instilled into the faculty members writing the curriculum from the first day of their involvement with VHS. This is probably why VHS has been so extensively written about in the literature and contributes to their being in their 10th year of operation. They are an independent, non-profit educational organization and I don't think they would still be in operation if they weren't able to provide what they say they can provide – a quality educational experience for all students.

IVHS admitted that they did not feel their quality control measures could measure up to the VHS measures. However, they do have measures in place that assist in maintaining the overall quality of their program, such as formal evaluation of faculty; surveys of students,

teachers and administrators; and periodic external evaluations. Participation in IVHS is voluntary and the program would not be able to serve as many students if the participating schools did not feel that there was some value associated with their participation.

LVSP is still on the upward swing of the learning curve. Their quality control measures rely on administrators and teachers who review curriculum and adapt and modify activities and assignments as needed to ensure quality of the program. I predict that as LVSP gains experience and time, they will reach the same degree of quality as IVHS and VHS.

Teachers

Finally, and perhaps most importantly, teachers can make or break a program. In the Internet-based classroom, teachers act as facilitators, assisting in the learning process allowing students to make many of their own learning decisions. Teachers with a constructivist perspective don't direct the learning process – they allow students the ability to explore the information in their own way and redirect as necessary through asking well placed questions that force the student to move beyond simple understandings to more complex ones and scaffolding the learning that occurs.

Moving from the role of directing learning to allowing learning to flow from the students is often difficult for teachers. One of the administrators felt that the ideal online teacher had 5-6 years classroom teaching experience. They were still new enough to teaching to be willing to try new things, and not so set in their ways that they continued to follow their same path. I do not know if there is any definite research in this area, but this would make an interesting future study.

It was interesting that all the teachers interviewed really enjoyed teaching online. One teacher for LVSP was adamant that she would never return to the traditional classroom again because she enjoyed the Internet-based classroom so much. This is important to quality teaching. Teachers who think of teaching as just a job are doing their students a great disservice because they aren't showing their passion and joy at the prospect of learning. Teachers who enjoy what they do and really interact with their students instill a sense of passion and joy for learning that will stay with them their entire lives.

Research Question Three Analysis

Research question three was: What do online teachers do to ensure quality of instruction? Each of the organizations credits their teachers as a contributing factor to the quality of the education received by students enrolled in the program. Teacher interview questions can be found in Appendix C. These questions related to professional development and teacher preparedness for teaching online, mentorship, curriculum development, teacher-student interactions, the general experiences teaching online. Because teacher responses were so similar across all three programs, general experiences were combined and analyzed further to find additional themes and subthemes. The following analysis will be done on an individual basis with the general experiences discussion to follow.

VHS

All VHS teachers are required to complete either the 22-week TLC or the 10-week NIM prior to teaching their first class. Seven VHS teachers were interviewed, six having completed TLC and two completing NIM (one participated in both TLC and NIM). In general, all six teachers felt adequately prepared to teach online. Several of the teachers made comments to the effect that nothing really prepares you for teaching online like experience, but they still felt prepared for this new teaching method. In response to whether or not there was a mentorship, three teachers did not experience a mentorship process but the other four did. Perhaps the three that did not joined VHS during its early formation while they were still trying to figure everything out.

As previously stated all VHS courses are written during a 22-week TLC course. Terms used to describe the curriculum writing process included: stimulating, rewarding, difficult, intense, overwhelming, or time-consuming. Many of the teachers wrote curriculum for courses they would like to teach but for one reason or another were not doing so in their current teaching situation. One teacher gave this reason for why she chose her class: "I'm teaching astronomy because my principal wanted us to be part of VHS. He asked me to prepare a course outside the general course offerings of most high schools."

Adapting materials and activities to the online classroom was not viewed as difficult. Some of the teachers designed special activities that are easily done from the students' homes. Most of the teachers report they were easily able to adapt many of the same activities they use in their face-to-face classes to their online classes. One teacher received permission to convert her

textbooks into PDF files eliminating the need to mail textbooks all over the world. Incorporation of more Internet sites is another change. All the teachers have activities throughout their courses that require collaboration. Teachers also add links that provide assistance in completing activities or allow for exploration of the content more deeply. Reflective activities are also included throughout the courses. The asynchronous method of communication allows students time to think and ask questions before responding

Teachers found that the teacher-student interactions in the online classroom were different from those in the face-to-face classroom. VHS requires conversations between teachers and students to occur within the Blackboard Learning Management System. These interactions are done through the use of discussion boards, private threads, and announcements. Some teachers use e-mail and telephone to contact students but only on rare occasions. Interactions with students are individualized for each student. Some students will share successes and personal information while others request information relating to course content. The more contact between teachers and students, the more likely the contact will progress beyond course content to more personal interactions. One teacher responded:

“Students receive genuine feedback for all they do and at times conversations occur that include personal news and other current issues of relevance to their success in my courses, and their everyday lives as well. It's all quite personal (never just a numerical score!). Through our numerous conversations in the various forums, we all (students and teacher) become well acquainted as members of an online community.”

Being conscientious in their teaching helps maintain a high quality learning experience whether in a traditional classroom or an online one. This is consistent in the research on quality teaching practices. Astleitner (2006) claims that instruction that is designed to be reflective giving students time to think and ask questions and allowing students freedom to explore the curriculum is a much more effective teaching practice. Providing activities and opportunities for collaboration that scaffold learning allows students to become more engaged in the learning process. When students are more engaged, they are more likely to learn the content and internalize the learning (Reeves, 2006; Bransford, 2000; Prensky, 2006). VHS makes considerable effort, beginning with the professional development process, to ensure that teachers are able to provide a high quality educational experience for students.

IVHS

The professional development experiences for IVHS teachers varied. Six teachers were interviewed for this study. All teachers completed the IVHS six-week online course prior to being hired, however some teachers had other professional development experiences in addition to the IVHS course. Other professional development programs mentioned were provided by Florida Virtual High School, eCollege Course Development Training, and the University of Illinois. All teachers felt they were adequately prepared to begin teaching online.

IVHS reported that their mentorship program contributes to the quality of their overall program and teaching. Several of the interviewed teachers began teaching for IVHS with the first group of teachers and therefore had no mentor for support. Most of them now serve as mentors for new IVHS teachers.

Curriculum development at IVHS is done as a team. Four the interviewed teachers worked on a curriculum developing team. Adapting materials and activities during curriculum development was not seen as difficult. Use of electronic textbooks, links to Internet sources, and Webliographies are incorporated into the courses. Adding helpful hints, additional instructions, and exam reviews helps students in the courses. Several of the teachers mentioned Elluminate, a provider of Web conferencing services, as a way to supplement content for the students.

Teacher-student interactions occur in a number of ways by IVHS teachers. Such methods as e-mail, phone calls, Elluminate, phone calls to parents, and emails to parents are used as needed. These contacts are made for a number of reasons. One IVHS teacher holds a weekly screen share, a way of sharing information on student's computers with the instructor, to ensure students understand the material being covered. Most teachers find their interactions are interesting and fun. The interactions with students are primarily related to questions and concerns, but occasionally students will talk about items of a personal nature.

Good relationships between students and teachers help to maintain a degree of quality to instruction (Astleitner, 2005). Teachers are responsible for creating opportunities for interaction (Perreault et.al., 2002). IVHS teachers use a large variety of communication methods to reach students and open avenues of communication.

LVSP

LVSP teachers received very little professional development prior to beginning their online teaching. Of the four LVSP teachers who were interviewed, one teacher had done some online professional development for a previous employer. The teachers at LVSP did receive some training on the learning management systems they use for course delivery. Mentorship has been extremely important to the LVSP teaching staff. LVSP maintains their own building where three of the four teachers interviewed have offices. This arrangement allowed easy access to other teachers and administrators. It also easily facilitates the collaboration and mentoring the LVSP teachers have found to be so valuable.

Because LVSP teachers use prepackaged courses purchased from vendors, the course development questions were not applicable to this group of teachers. The prepackaged course content cannot be changed, however teachers can modify assignments to better meet the needs of the students. Additional assignments and instructions can be created as needed.

LVSP has a very unique arrangement. As previously stated they have their own building. Teachers and administrative staff have offices in the building, and students are free to use study rooms in the building to complete their work. This arrangement allows teachers and local students to interact on a much more personal and even face-to-face level than just through strictly online interactions. Teachers also interact with students using e-mail, chats, phone calls, and instant messenger. Interactions with students are for a variety of reasons. Phone calls can be used for oral assessments, to talk about absences, or to get the student back on track. Interactions are primarily related to course content but sometimes can be used to better get to know the students.

LVSP relies heavily on their teachers to maintain quality of instruction because they have little control over the courses they are offering. The teachers rely heavily on the collaboration and mentorship with their colleagues. Interactions between teachers and students help in giving the impression that there is little distance between them. It also helps in making the teacher seem more approachable to the students (Lorenzetti, 2003; Kemp, 2003). Support networks are very important to new online teachers (Wood, 2005). LVSP found this out very quickly in starting their program and actively maintains their mentorship and collaboration even with the teachers who work from home.

General Experiences

In total, 17 teachers were interviewed for this study. Responses across all three programs were very similar. For that reason I combined the general experiences question across the programs and found common themes that provide evidence that the online programs are providing a quality educational experience for students. Common themes are found in the table below:

Table 4-5 Major themes and subthemes of teachers from all participating programs

Anonymity
Culture shock
Diversity
“Feel goods”
Increased educational experiences
Individualized education
Learning/teaching styles
Motivation
Pedagogical changes
Scheduling
Student skill transfer
Time drains

Anonymity

Being in an online classroom affords students and teachers some anonymity. In many cases, they will probably never meet in person, especially if the enrollment is from a very diverse population of students, such as VHS where students can literally be located around the world. Several teachers made comments relating to anonymity. Some of these comments are:

- “I was stunned with her response to her fabulous grades. She explained that her face-to-face teachers don't like her,... and while her F2F [abbreviation for face-to-face] teachers just see her frustration and how that's demonstrated and/or hidden in their classrooms, I am able to see what she's really got going inside her head with her vast imagination, superb writing skills, and exceptional work ethic... she told me no one else has ever seen her as an a student... ever”
- there is no way for me or my students to ”judge” students other than by their work in their interactions in discussion areas

- even gender is often blurred, and unless students choose to talk a lot about their personal situations, we won't know if someone is rich, poor,....
- different kids shine online than in f2f situations

I think these comments say a lot about the anonymous nature of an online class.

Diversity

We live in a diverse world, full of many viewpoints and ways of looking at things. Online learning allows students the opportunity to interact with a diverse group of students and teachers. Comments relating to diversity were the most numerous received. The following are examples of some of those comments:

- students from all walks of life
- all ability levels
- all kinds of situations
- working with students from all over the United States, China, and Dubai
- kids interact with each other way more so far as race, social group, and socio-economic class, again, in ways I did not see happening nearly enough in the face-to-face setting

The ability to interact with students from a wide geographic area increases the ability of students to understand and empathize with others. In an Internet-based classroom, students are limited only by time and access rather than by diversity (Palloff & Pratt, 1999).

“Feel goods”

This theme title came directly from the transcripts. It indicates the positive feelings gained from the experience of teaching online as expressed in the following ways:

- very positive experiences
- it's a lot of work, but the results are worth it
- as an educator, the satisfaction is immense... it is impossible to express adequately in words
- receiving comments like 'thank you so much for having this kind of class because I never would have graduated' or 'I never thought I could do English'... some variation of that theme

Increased educational experiences

VHS and IVHS feel it is part of their mission to offer increased educational experiences. This theme was expressed in the general experiences of a couple of teachers from all three programs in comments like:

- 14 students from a small, rural school who all meet in the library's computer lab to do this course. Their consumer ed teacher retired and the school is using IVHS as a less expensive alternative to hiring another teacher
- students from small rural schools, who are taking this course because their school doesn't offer calculus
- able to serve students from a wide range of special needs -- including gifted and talented, learning/behavioral disabilities, ELL, students needing advanced level courses, or in general the numerous elective credits students need for their future career plans/postsecondary education
- access to a selection of courses unavailable at our school

Given these comments, it would seem that the programs are fulfilling their mission.

Individualized education

Many of the teachers liked the fact that online learning allows them more freedom and flexibility to individualized instruction for their students. This is evident in the following comments:

- work closely with their [the special ed students] special ed teachers
- I am able to individualized in ways I was never able to do face-to-face
- with online learning it is more individualized. You work with each student on an individual basis. That gives teachers more freedom to monitor student needs that cannot occur in a traditional classroom.
- In a traditional classroom when you give back a test or some assignments, the feedback is very general to the entire class, but not individualized at all.

For constructivist teachers, individualized instruction can help make the learning more meaningful students. Not all students learn in the same way, so by individualizing instruction all learners can achieve academic success.

Learning/teaching styles

As stated in the previous paragraph, not all students learn in the same way. By the same token, not all teachers teach the same way. Teaching online not only allows for individualized instruction, it also recognizes the teachers' ability to individualize their teaching.

- The expectations for me as an educator with VHS so clearly match the school improvement work happening at my own school
- online teaching fits my teaching style
- the mode of instruction here fits her earning style
- I would not ever go back to teaching face-to-face. I have not even considered going back to face-to-face.

As can be seen from the above comments, the online teachers recognize that their teaching style fits with this method of teaching. Several comments similar to the last one were made, that the teacher would never go back to teaching face-to-face. This enthusiasm for teaching may contribute to the quality of instruction students experience. This could be explored further in future research efforts.

Pedagogical changes

This theme related directly to the last interview question, and is included as a theme because of the strong responses received. Nearly all of the 17 teachers interviewed felt that teaching online had changed their face-to-face teaching. This is evidenced in the following comments:

- hone my communication skills, which also benefits my f2f class
- much more structured and pace oriented
- I am retired from my face-to-face classroom, but I am sure I would have been doing some things differently. I would be available via Internet, e-mail, IM for students to ask for help with assignments.
- developed my web site to be more for my face-to-face classes for everyday use
- being clearer in my expectations of students' work
- VHS uses technology and encourages me to incorporate it more in my classroom. It's convinced me that there's value in familiarizing students with technology even if it doesn't add much to the content taught
- everyday I experience what works in the online forum, and feel a responsibility to be share my experience with my colleagues

My own personal experience with online teaching was the reason behind asking such a question. This is an area that warrants further research.

Scheduling

An advantage of online courses is the ability to complete coursework at a time and place that suits the student. Students can access courses 24/7 because the Internet is never closed.

- can't fit this class into their school schedule, so take it online
- students want to graduate early so take online classes to help get all their requirements completed
- I have a student right now who is at the Olympic Training Center for Archery in California. He trains 10-12 hours a day and does schoolwork after 9 p.m. at night or on the weekends.

Time drains

Time drains refers to all those little things that occur in the classroom that take away from instructional time. This includes things such as taking attendance, writing passes, intercom interruptions, or students forgetting things like books and/or assignments in their locker, car, or at home. Another teacher mentioned dealing with discipline which would fall under this category as well. Although some of the time drains are replaced in a different form, for the most part, this issue was greatly reduced in the online classroom.

Other Noteworthy Comments

Three items came out of the interviews that I feel are noteworthy because they fit an element brought up during the literature review.

Culture shock

A single comment relating to culture shock is included because it speaks to an issue mentioned in the literature review relating to the preparation of high school students for college (McCarthy & Kuh, 2006). The teacher who raised this issue was commenting about students who found that good grades came very easily to them in high school. Taking an online course, especially an advanced course, is often more rigorous than the students expected. He likened that experience that happens to some college freshmen who make the discovery that college expectations are much different than high school expectations, both in quality and quantity.

Motivation

The motivation for taking an online class was mentioned by two teachers. One of the comments was simply, "...students for this class are usually real motivated." There was no real context to put this comment in perspective. Perhaps students are more motivated because they're using technology or it is a novel way to take a class. The other teacher who mentioned motivation was talking about the reasons students take an online class. Some of these reasons include teenage pregnancy, illness, failure to achieve academic success in the traditional setting, or behavioral/mental health issues.

Student skill transfer

Oliver and the McLaughlin (2001) felt that the development of what they called "generic skills" occurred quite readily in an online classroom. The skills include communication skills, technology skills, or basic life skills. These are skills that students can transfer to all aspects of

life. It is included in this list of themes because one teacher commented about how it was not at all unusual for students to tell her how success in her class has enabled them to be successful in other classes as well.

Summary

Some of these themes are not directly related to quality of instruction, but may indirectly contribute to the overall quality of instruction. Being able to individualize instruction, increasing educational experiences, the issue of anonymity, diversity, learning and teaching styles, and pedagogical changes resulting from teaching online can't help but strengthen the quality of instruction for all students.

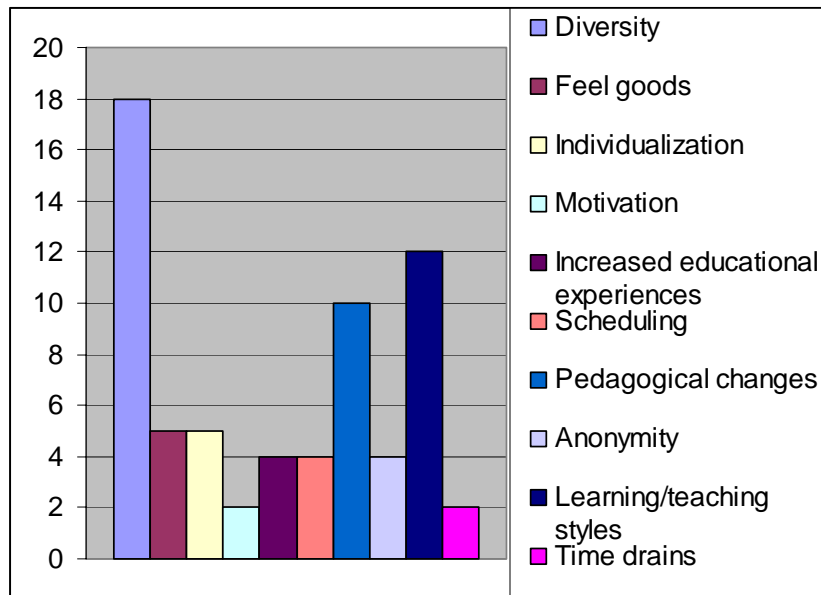


Figure 4-4 Frequency responses of teachers related to general experiences in online teaching

CHAPTER 5 - Discussion, Interpretation, Conclusions and Recommendations

This chapter will provide conclusions in answer to the following research questions: 1. What attributes indicate quality of instruction in an online high school program? 1a. How do online programs assure quality of instruction in the courses they offer? 2. What characteristics do successful online high school programs have in common? 3. What do online teachers do to ensure quality of instruction? Following this general discussion, interesting notations and recommendations for future research will be discussed.

Attributes Indicating Overall Quality of Program

A quality online program has some key features. First, a high quality online program must provide all learners with equal access to a high quality, diverse, and rigorous curriculum. High quality programs must also provide learners with appropriate educational materials. Ensuring the ability of teachers to teach in the online environment is another indicator of a high quality program. Quality online programs offer support services to online teachers and students to assist in making the transition to the online classroom. Finally, applying and maintaining a quality control process is important in maintaining the quality standards that the online organization has set for itself. A high quality program must ensure that learning is taking place. This is an important part of any educational program, whether it is an online or traditional classroom. However, it was not specifically studied here because student outcome data were not obtained.

All three programs in this study were brought together to serve all students by providing access to highly qualified teachers and high quality courses. The mission statements of the larger programs, VHS and IVHS, were both very similar in that they addressed offering high quality educational opportunities and expansion of educational experiences for today's students. The ability to reach students who might not be able to participate in certain types of courses was a high priority for all three programs. Having this goal as a clearly defined mission gives an online program a specific direction and overall focus, maintaining a direction for the organization.

A large and diverse course catalog would also be a program quality indicator. VHS offers 375 courses a year and IVHS offers approximately 200 courses a year. Course offerings are very broad, from core academic courses, to general elective courses, to advanced courses. With the increased competition for enrollment at colleges and universities, the ability to offer advanced courses, such as AP classes, to students who might otherwise be unable to obtain these classes strengthens an online program. The ability offer a large number of courses allows larger numbers of students to access courses that might not otherwise be available in their school due to lack of a teacher, numbers of interested students, or school budget shortfalls.

Courses designed to meet state and national curriculum standards are required for a high quality online program. By meeting national curricular standards, parents, teachers, and administrators can be confident that it will meet the needs of their school and their students because states base their own curricular standards on those national standards.

High school courses must address the social and emotional aspects of learning as well as the content. Through the use of appropriate educational materials and activities and taking advantage of the features of the learning management system, courses can offer a high degree of collaboration which can replicate the social environment of the traditional classroom. Using discussion boards and chat rooms further creates the social network of a traditional classroom. Teachers can see student thought processes through the written conversations occurring in the course. This allows teachers to evaluate where students are in thinking and learning processes about a subject, guiding them forward. The ability to use the processes of discussion, dialogue and public discourse through technological support of the online classroom can expand the physical classroom boundaries (Gillette, 2001).

The learning process in the online classroom is more individualized than that of a traditional classroom. Students are freer to use their own learning styles to enhance their understanding of a subject because they cannot see how the rest of the class is working through the activities. Offering a variety of assessment options in the course allows students more ways to demonstrate their understanding than they might have in a traditional classroom.

Teaching online is a different experience than teaching face-to-face and potential online teachers need to be exposed to those differences. This is where an online professional development process helps to make that transition. The professional development process for IVHS allows teachers to get a feel for online teaching to see if it is something they want to

participate in. By participating in the professional development process, IVHS and potential teachers get the opportunity to see if there is a fit between the program and the teacher. Participation does not obligate the teacher or IVHS to an ongoing relationship – in other words, employment by the program. The VHS professional development process is structured the way teachers will teach an online class. In this way, it prepares VHS teachers for the some of the same frustrations that new students will feel in their classes and gives teachers the tools and expertise to deal with those frustrations.

I was impressed with the IVHS professional development process. It was described as a period of honest discovery in which teachers are trying to find out if they could work well in an Internet-classroom and IVHS is trying to discover if they would be a good fit for the overall program. The fact that the program pays for the professional development also allows for a legitimate discovery because some might feel that because they had paid for the right to teach for the organization that they would make it work, even if they didn't feel comfortable in the Internet-based classroom. Not everyone is cut out for teaching, traditionally or virtually, and this arrangement allows a teacher to really decide if they can really work in the virtual realm.

A mentorship for new online teachers can be an important part of the professional development process. Like all new teachers, new online teachers are experiencing frustrations and issues they have not experienced before. Mentorships pair new teachers with more experienced teachers. Having a mentor to contact and ask questions or bounce ideas with helps the transition from face-to-face to online teacher. It provides a support network and aids in teacher success.

I cannot really provide an opinion as to which method is better: (1) Professional development and mentorship, or (2) Mentorship only – as LVSP teachers experienced. Certainly having some method of professional development is helpful. Having a mentorship program is also important because online teaching is so new and different, even experienced teachers can feel like brand-new teachers during the transition. Being part of a cohort was very helpful during my own professional development to teach online. I knew that there were other teachers out there who felt almost as lost as I felt at times when I first began teaching online, and that I could rely on the professional development facilitator and my cohort to get me through. Face-to-face meetings add an element of belonging to a larger, stronger group. Sometimes the ability to put a name and a face together makes collaboration and working together even easier.

Online programs should have a plan for school and student support. Because online teachers and students will rarely meet, some sort of support for the students and teachers is important. This support should be in the form of a person in each school who will be in contact with the students on a daily basis. Online teachers can then use this contact person for assistance in dealing with student non-compliance, attendance, discipline, or anything that comes up with that student. By the same token, the school support person should be able to contact the teachers of courses for any issues regarding the student and grades or progress. The school support should also include some sort of technical assistance to deal with technical issues that might come up.

Development of clear and concise quality control measures is a must for online programs. Quality control measures that are closely tied to educational goals and the mission of the program ensure that the program is following the path laid down when it was started. Internal and external evaluations are necessary to ensure that these goals are valid and sustainable. External evaluations offer reliability and validity to a program's internal evaluations.

Attributes of Online Teachers

As important as the individual aspects noted in the previous section are to an online high school program, online teachers are very important to the overall success or failure of an online program. Schools are required to use teachers who fit the definition of No Child Left Behind for highly qualified teachers. Programs should be using certified/licensed teachers, teaching courses in their certification/licensure area in order to meet the NCLB requirement. Programs should also have a process for teacher evaluation within the online program as an indicator of quality instruction. What makes a good online teacher? Several attributes can be inferred from the data collected: Experience, enthusiasm for teaching, enjoyment of online teaching and eagerness to continue learning and integrate technology into their teaching.

In all three programs, the teachers have approximately 8 years of experience with an actual range of 1-35 years. VHS boasts that 85% of their teachers have at least a master's degree. Average length of online teaching experience for VHS and IVHS is approximately 5 years. LVSP has only been in operation two years.

IVHS and LVSP hire teachers directly for their programs. LVSP says attributes they look for in teachers includes classroom experience, and a love for kids and teaching. Perhaps the

reason teacher enthusiasm is important to all types of teaching is that enthusiastic teachers can show their students the passion for a subject and increase the desire to learn about the subject. An LVSP teacher illustrates this, saying “During our genetics unit, I sent out an email to my students saying ‘You guys know modern genetics has only been around for 53 years. That’s not very long and look at what we have done. Our knowledge grows exponentially in that field and you guys are going to have to answer questions that I can’t even fathom.’ That is why it is so cool, so dynamic, and this is why we need to know it and learn it and be able to apply it to our lives.”

Online teachers seem to really enjoy the experience of teaching online. A VHS teacher stated “This experience has been great for me; being a full time administrator, this has helped keep me in touch with the latest teaching methods.” An LVSP teacher stated that she would never go back to teaching face-to-face because she enjoyed the online teaching so much. A VHS teacher also related that although she loves teaching, she does not miss it (face-to-face teaching). One reason given for enjoying the online experience is that there is no way for “me or my students” to judge students other than by their work and their interactions in discussion areas. This VHS teacher further related that even gender becomes blurred in the online classroom.

Online teachers relate that teaching online has also changed their face-to-face teaching to some degree. One of the virtual teachers stated, “I think I’ve learned a lot about being clearer in my expectations of students’ work.” Another virtual teacher related “It is in this setting that I am able to individualize in ways I was never able to do face-to-face.” Another comment from one of the teachers, “If I can do this with my VHS class, how can I do it with my other classes, and vice versa.” An IVHS teacher related that teaching online has helped hone communication skills which also benefits face-to-face classes. Another IVHS teacher stated that the experience with online teaching has made him/her much more structured and considerate of the pace of the course taught in the traditional setting.

Online teachers spend a lot of time online. All teachers surveyed felt that they spent at least 1-2 hours a day or more answering student questions, grading, or revising their course. When the teachers only teach online, they spend 20-45 hours per week per class depending on how many classes they teach. An LVSP teacher said “It seems like a lot when it is all you do.” IVHS teachers are required to keep track of the time spent on their online course for audit purposes, while the other two programs do not have this requirement. Communication between

students and teachers helps enhance the learning process (Kemp, 2000). Teachers are seen as more approachable and more a member of the class which promotes and fosters communication (Kemp, 2000). Surveyed teachers from all three programs indicated they used a number of methods to communicate with their students. Chat rooms allow for synchronous discussion between teacher and individual students or student groups. It allows teachers to put up examples or offer tutoring as needed. Instant messengers, email, and telephone were mentioned by teachers as methods of communication. Having a course thread for private student and teacher conversations was also mentioned by the teachers as important in the communication process.

From this research, I can infer that an online teacher has to be willing to learn to use technology recognizing that good teaching is not about the technology but about how technology can enhance teaching. The teacher should also have a desire to experiment with the technology in order to ensure a quality learning experience. Just knowing the content of the teaching field is not enough. I felt that I had a good understanding of my content when I started teaching online, but many times in that first year of online teaching I found myself unable to explain the concepts verbally so my online students could understand. Because nearly all communication takes place in written form, the teachers have to be good communicators, in addition to being fluent in their content.

Students are ready, willing, and able to use a multitude of methods to communicate with their classmates. They expect the same of an online teacher. Online students can be more demanding than traditional students because there are no boundaries on the Internet. In the classroom, students sit in the desks in a classroom for 60-90 minutes and once they leave the classroom, so do their thoughts about that subject. The online classroom is available 24 hours a day, 7 days a week and students literally get online at all hours of the day to complete work. For this reason, the teacher has to be willing to use many different methods of communicating with students.

Finally, the online teacher must be enthusiastic about their subject and have a strong desire to continue learning. They must be persevering and not so tied to a teaching style that they know only one way to communicate the content. Not everything in an online classroom works as intended, just as not everything works in a traditional classroom. Good teachers know that they have to change things and keep them fresh. Online teachers do the same things. I have

made many changes to the scope and sequence of my course as well as changing and reevaluating lesson activities to make my course meet the needs of the students.

Similarities and Differences

VHS and IVHS were remarkably similar, and perhaps this is why they have been written about in the literature. Both programs have very well defined quality control measures, professional development, and teacher expectations. Responses from administrators and teachers from these programs were very similar in nature. The major difference between the two, based on my observations, is that IVHS seems to have more faculty members from higher education institutions than VHS, a fact that is probably due to the different ways teachers are hired for each program. IVHS hires all teachers as adjunct faculty and pays on a per-student basis, without differentiating pay based on educational background or experience. VHS teachers are employed by high schools and high schools do not often have PhDs teaching in their buildings.

LVSP is the newest of the programs participating in this study and offered a real contrast to the other two programs. It does not have the quality control and professional development practices that the other two programs have in place at this time. Perhaps the other two programs struggled with this aspect as well when they started, but they are far enough removed from the initial start up that it didn't come through in the interviews. The administration of this group has discovered that some of their plans have not worked out as expected and are working through them to improve the overall organization. It will be interesting to watch this program move forward.

Recommendations

The goal of this research was to provide educational stakeholders with some basic information related to choosing an online educational program for high school students that would be considered part of an overall quality educational experience. If I were an administrator, considering an online educational program for students in my district, these are the things I would look for in an online program:

1. The professional development offered to the teachers in the program. Having some sort of professional development is an important aspect in regard to preparing teachers to teach online. Teaching online is very different from

teaching in the classroom and adequate preparation for the experience is essential to improving the success of the online teacher. IVHS and VHS both have highly organized professional development processes. The teachers for these programs cited this professional development in their own online teaching success, as well as some sort of mentorship following the formal professional development process. Having an informal professional development process can also add to the overall success of the teachers because technology is always changing. The informal professional development process can occur very quickly as teachers react to changes in the learning management program or technology upgrades. LVSP teachers, who had no formal professional development process prior to teaching online, relied heavily on their collaboration and mentorship of each other and attributed the mentorship to their own success in the online classroom. Many of today's teachers are not as adept with technology as the students. This is another reason that professional development is important for teachers to be able to make the transition from face-to-face teaching to online facilitation.

2. A good quality control process and the ability to obtain data regarding that process. VHS and IVHS both have highly developed quality control processes, internal and external. The data collected through the quality control process can be shown to potential users of the program as an indicator of the value being provided by the program to the schools. If the fact that greater than 80% of participating schools renew their memberships with an organization or that 85% of the teachers of a program have advanced degrees can be proven through the data collected in the quality control process, it provides tangible data regarding a program's overall package. LVSP is learning and growing. As they continue to do so, I think that they will also begin to develop formal processes to ensure the quality of education offered by their program.
3. A course catalog that broadens the bricks-and-mortar school's own course catalog. Schools enroll in online programs in order to enhance their own course catalogs and offer students the opportunity to take classes the school

cannot offer. Therefore, the courses offered through the program should be able to provide students with nearly any course that meets their interest that would not otherwise be available to them in their own schools. Courses should meet national curricular standards. States base their own state curricular standards on the national standards, thus ensuring that programs crossing state lines will meet state curricular standards. The courses should also offer a high degree of interaction between the students and students and teachers, as well as direction to outside sources that will enhance the overall learning and individualize the learning for the students. Availability of courses to any and all students is another important aspect. Educational opportunities should not be available to only the select few who have computers and Internet access in their homes, but should be available to all students regardless of their socioeconomic status. Information related to how the courses were developed would be very important to know.

4. Teachers for the program would play a role in decisions about enrolling in an online program. No Child Left Behind has stepped up the requirements for teachers at all levels, to ensure that all students are taught by teachers who are highly qualified. Highly qualified means teachers hold a degree from a 4-year institution, have passed a content-level exam proving content knowledge, and are fully licensed to teach. VHS and IVHS boast that most of their teachers have at least a master's degree or above, LVSP teachers have a wealth of classroom experience. All teachers for the programs are state certified/licensed and teaching in their content area. The teachers are highly interested in their subject matter and enthusiastic about teaching, in general. When teachers are committed to teaching, it enhances the learning because the teacher is working just as hard as the students to ensure success in and out of the classroom. When teachers look at their teaching as a job that they go to Monday through Friday, it comes through their teaching and changes the learning environment to one that is not so positive. Many of the teachers interviewed said that they would never go back to teaching face-to-face, or that they taught online because they truly loved doing so, as well as being very

interested in the subject they are teaching. Some of the teachers were teaching online because their school didn't offer the class they were teaching which further added to their enthusiasm.

5. Additional minor points an administrator should look for would be related to service and support. How does the program communicate problems such as attendance with the school enrolling the students? What additional benefits might the school get through participation such as professional development opportunities for other teachers in the school? Programs should be willing to freely give out information related to other schools and names of administrators and teachers who can give personal testimony about the program. Even looking at these items cannot guarantee quality of instruction and a positive learning experience for students, but it can provide administrators with a starting point.

Recommendations for Future Study

The purpose of this study was to find out what characteristics indicate quality in an online high school program. The limitation of this study was that there were only three participating programs. Although these programs were very diverse in student population and scope, the study was limited by time and size. Studies using more participants and included interviews with students would definitely strengthen this study. Inclusion of a quantitative element, such as comparison of AP scores, would more ably define the claims of quality for the programs.

An IVHS teacher related that many of his students come from small and rural schools. In his experience, although these students are very bright and capable, he felt that they had not been exposed to the academic rigor and expectations of upper level courses. McCarthy and Kuh (2006) state that many high school students, from all sizes and types of schools, do not have the study skills necessary to be successful in college with only 27% of ninth graders making it through their first two years of college and many of those having to take a number of remedial courses. If students are exposed to greater rigor and become more responsible for their own learning by participating in an online course in high school, will they be more prepared for college and will this increase the college graduation rates?

When talking about teacher qualifications, the LVSP administrator related that she felt teachers with less than 10 years classroom experience made better online teachers than teachers with more experience. Her reasoning was that teachers with more classroom experience tended to be more rigid in their expectations and less flexible than younger teachers. After interviewing this administrator, I asked administrators from the other two programs. A VHS administrator agreed that there might be some truth to what the LVSP administrator had found but it was probably not a significant factor, in her experience. Future research looking into how teacher qualifications and experience translate to online teaching success is another area that would make interesting research. Is there an optimal level of experience necessary before teaching online? Can there be too much experience to allow teachers the flexibility needed for teaching online?

A fourth area of potential research is related to how teaching online changes face to face teaching. This is a research question that has very little research associated with it, probably due to the recent development of online education for high school students and the fact that the two longest running programs have only been around for 10 years. One of the LVSP teachers said that she was very excited to be in this field because it was new and she expected it to only grow stronger in the future. Findings to my question about how teaching online changed face-to-face teaching were very surprising to me and something I would really love to find out more about.

An element of quality that was not studied was related to student outcomes. High quality educational programs ensure that learning is taking place. Although this was not considered in this study, future studies could be done looking at student outcome data, such as pass rate or completion rates of online classes.

There is a body of research that says there is no significant difference in student outcomes between online and face-to-face instruction. Some would ask “Should there be?” Much of this research is done at the post-secondary level and cannot be applied to high school students, but research adding to this body of literature could be carried out. Such a study would have to look at student outcome data, such as performance on a standardized test, as the performance measure, comparing the online student outcome with the face-to-face student outcome.

IVHS teachers have classes limited to 50 students. VHS limits class size to 25 students with no more than four students from a single school in any section of a class to ensure diversity

of the student population. A research question related to this would be to find out if there is an optimal class size and what that class size might be. Complementary to that question is the question of what is the optimal online teaching load for maintenance of quality in instruction.

It would also be worth going back to LVSP in three to five years to see what changes it has experienced and how it has grown. This organization seems to be working through many issues all at once. First the program needs to develop some basic policies and procedures that work for all parts of the program related to course completion. They currently recognize that this issue needs to be addressed and a workable solution found. I would recommend that this organization work toward developing more of their own classes rather than relying on vendors. Several of their current teachers have expressed an interest in this facet and should be given the opportunity to do so. The mentorship program they have started is wonderful and should be expanded as they continue to grow. Another recommendation would be to develop a quality control program and do both internal and external audits to ensure reliability and validity of such a program, at least until they have an established pattern of audits. I believe that LVSP is on the right track and will prove to be a high quality program if given the chance to evolve and grow.

I recognize that funding of online programs is an important issue, especially with regard to homeschooled students, I did not structure my research instrument to get beyond current basic funding of the programs. An area of future research could be to look at how online programs are funded and how that funding affects the operation of the program.

Online teaching, or hybrid classes, will most likely be required of future college of education graduates. The National Education Association has recognized that integrating online teaching methods will be required of future teachers and it is up to the colleges and universities to prepare pre-service teachers for this likelihood. How should schools of education change their programs to better prepare teachers to teach online?

Online classes carry heavy reading requirement. This topic was mentioned during a conference call about two years ago. Nearly everything done in an online classroom is done with words on a computer screen. Today's students tend to use their own electronic shorthand, fail to use proper capitalization, spelling, and punctuation. Does taking an online class improve reading and writing literacy?

One final research possibility, corresponding to the above, would be to compare how teacher education graduates today integrate technology into the classroom versus teachers who

have been teaching for more than 10 years and how that might affect student outcomes. Prensky (2005) explains the differences between digital natives versus the digital immigrants. Today's college graduates have never known a world without the Internet and cell phones and a host of other electronic and technical devices. The professional development literature related the importance of giving teachers the opportunity to use technology prior to teaching with it. Would today's graduates step into the virtual classroom more easily?

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Appendix A - Informed Consent Form

KANSAS STATE UNIVERSITY

INFORMED CONSENT

PROJECT TITLE: Comparison of High School Online Educational Programs: Characteristics of Quality

APPROVAL DATE OF PROJECT: _____ EXPIRATION DATE OF PROJECT: 6/1/07

PRINCIPAL INVESTIGATOR: CO-INVESTIGATOR(S): Diane McGrath/Jean Kiekel

CONTACT AND PHONE FOR ANY PROBLEMS/QUESTIONS: 620-241-4012 Jean Kiekel

IRB CHAIR CONTACT/PHONE INFORMATION: Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785)532-3224
Jerry Jaax, Associate Vice Provost for Research Compliance and University Veterinarian, 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785)532-3224

PURPOSE OF THE RESEARCH: Dissertation research

PROCEDURES OR METHODS TO BE USED: Survey/Interview and analysis of documents

ALTERNATIVE PROCEDURES OR TREATMENTS, IF ANY, THAT MIGHT BE ADVANTAGEOUS TO SUBJECT:

LENGTH OF STUDY: 1 year

RISKS ANTICIPATED: None

BENEFITS ANTICIPATED: Ideas for improving quality of online courses for high school students

EXTENT OF CONFIDENTIALITY: No identifying information will be used for individual participants. Name of program will be identified.

IS COMPENSATION OR MEDICAL TREATMENT AVAILABLE IF INJURY OCCURS: N/A

PARENTAL APPROVAL FOR MINORS: Not needed because students will not be surveyed or observed

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

(Remember that it is a requirement for the P.I. to maintain a signed and dated copy of the same consent form signed and kept by the participant)

Participant's Signature _____ Date _____

Participant's Name (Printed) _____

Witness to signature (project staff) _____ Date _____

Appendix B - Administrator Interview Questions

1. How did the program get its start? (history of the program, impetus for start)
2. What is the structure of the organization? (are teachers employed by program, etc)
3. How many courses are offered?
4. What range of courses are offered by the program?
5. How many students are served by the program?
6. What is the overall program drop-out rate?
7. Who can enroll in program classes?
8. How is the course distributed? (what course management system is used)
9. Do you use pre-packaged courses or faculty written courses? (If faculty written courses, how were courses developed?)
10. What is the structure of the course – are students free to work as long as they meet certain deadlines or is there a structured week-to-week flow?
11. What methods of faculty development are used for teacher preparation to teach online?
12. How much experience do teachers in the program have? (years of teaching, degrees earned)
13. How does the administration ensure quality of instruction?
14. What percentage of enrollment takes AP classes?
 - a. How many of those students take the corresponding AP exam?
 - b. What is the pass rate (3 or above)?

Appendix C - Teacher Interview Questions

1. What made you want to teach online?
2. What sort of professional development did you undergo prior to teaching online?
 1. Did the professional development you received adequately prepare you to teach online?
 2. Was there an online mentorship or cohort to assist you in the transition from face-to-face to online teaching?
3. Who developed the course you are currently teaching?
 1. If you wrote the curriculum, what was that experience like?
 2. What is the course length?
 3. What is the structure of the course – self-paced or scheduled deadlines?
 4. Did you develop the syllabus?
 5. Did you develop activities for the course?
 - i. How did you change the materials for online instruction
 6. Can you change the course or must you use it as written?
 7. Do you “tweak” the course or leave it alone after it is finished?
4. How do you interact with your students? (through the course, IM, email, phone)
 1. What are those interactions like? (course content, personal news)
 2. What sorts of student-to-student interaction occur in your course?
 3. Do students interact with outside sources (e.g. professionals in the field)?
5. How much time do you spend on your online course?
 1. Daily
 2. Weekly
6. Tell me about some general experiences you have had in your online course?
7. Has the online teaching experience changed the way you teach in the traditional classroom? How?

Appendix D - Permissions

Permission from Kerry Rice to duplicate table 2-1

Hi Jean,

You have my permission to reproduce the table and include the additions. I know you've probably already done this but you will definitely want to take a look at the report by Watson, et al. that was the source for that table. Good luck! –Kerry

PS: Has the article been published? I haven't heard a thing from JRTE about it and it's not on the journal Website yet.

Kerry Rice, Ed.D.

Boise State University

Department of Educational Technology

<http://edtech.boisestate.edu>

Phone: (208) 426-2050

Appendix E - VHS NetCourse Standards and Indicators

VHS Online Course Design

- NOT a correspondence course
- Student-centered
- Active, engaged learning
- Collaborative, small group learning
- Secure, password-protected environment
- High academic standards
- Organized throughout most aspects of course
- Effective and appropriate use of the medium
- Effective use of teacher's voice
- Diverse & multiple uses of instruction
- Quick, timely, regular feedback
- Clear objectives & performance expectations

Course Description

Standard: VHS NetCourses are clear in their description of learning objectives, and assignments in the schedule area are structured to require consistent efforts from students throughout the term.

Indicators:

- Understandable to students and parents
- Includes a clear listing of student assignments
- Includes both online and offline activities
- Includes a statement of expectation about online discussion groups
- Includes student performance indicators linked to course performance objectives

NetCourse Content

Standard: VHS NetCourses are developed and clearly matched to the performance objectives outlined in the national models for each given content area. Interdisciplinary objectives are encouraged.

Indicators:

- NetCourse performance objectives are clearly stated
- Performance objectives are matched to the corresponding national model content area
- Performance objectives are grade level appropriate
- Performance indicators clearly matched to objectives

NetCourse Characteristics

Standard: VHS NetCourses will maintain high levels of engaged learning and focus on the development of critical thinking skills. Every course should be an opportunity for the student to master a limited number of concepts in depth, rather than many concepts at a minimal level.

Indicators:

- Engaged learning
- Student/student and student/teacher communication and collaboration
- Facilitates learning of course content
- Higher order thinking
- Problem solving skills
- Research skills
- Evaluation skills
- Critical thinking

Assessment and Student Portfolios

Standard: VHS NetCourses clearly describe how student performance will be assessed. VHS teacher maintains current assessment results that are accessible to students.

Indicators:

- Weights of assignments are clear to students
- Student portfolios are up-to-date
- Rubrics are related to performance indicators
- Different assessments methods used

NetCourse Communications

Standard: VHS NetCourses are structured to encourage frequent communications in the Discussion Forums.

Indicators:

- Teachers have frequent presence online
- Teachers use appropriate communication and feedback strategies
- Horizontal and vertical cascading in the forums

NetCourse Pedagogy

Standard: VHS NetCourses are structured to foster community-building within the NetCourse. VHS NetCourses use innovative instructional strategies to facilitate online learning.

Indicators:

- Teachers foster a virtual learning community
- Students learn strategies for evaluating web-based materials
- Variety of activities for diverse students
- Teachers have subject-matter expertise
- Teachers equipped to teach online
- Timely feedback provided to students

Appendix F - IVHS Primary Focus Areas

The following 10 areas were developed by the IVHS planning consortium:

1. Curriculum and assessment – ensure delivery of high quality, technology driven curriculum and assessment procedures to meet the needs of learners while maintaining or exceeding Illinois state standards.
2. Professional development – building or accessing a strong program of professional development for IVHS educators.
3. Technology approach – building on and maintaining a strong technological approach that ensures successful technology driven teaching and learning.
4. Student services – provision of services that will allow students to be successful while providing a measure of accountability.
5. Equity and access – ensuring that all participating schools have equal opportunities to access IVHS resources.
6. Funding – securing adequate funding to meet program goals.
7. Policy administration – addressing key issues and presenting to the governing body.
8. Communication and dissemination – developing and maintaining a public relations policy.
9. Needs assessment – a determination of stakeholder interests and needs for both short- and long-term operation of the program.
10. Linkages – maintaining a cooperative and collaborative endeavor

Appendix G - Excerpts from Administrative Transcripts

Table G-0-1 Excerpts from administrative transcripts

Theme	VHS (n=4)	IVHS (n=3)	LVSP (n=2)
Professional Development	VHS teachers go through a rigorous training program to learn how to develop and teach a VHS course.	Professional development is done both online and face to face.	Florida virtual has a 10 month session (once a month),
	a 22 week training process called Teacher Learning Conference and they are learning about online course design.	Our faculty development starts in the application processes.	It is one of those How do you train staff on brand new stuff that everybody is trying to figure out across the nation anyways
	These professional development opportunities are facilitated by VHS staff, and teach teachers to become effective online facilitators and to work with the Blackboard LMS	honest discovery. We are trying to discover “are you right for us” and you are discovering if online teaching is for you.	
	They are learning about the VHS standards and they are writing the course to those standards.	five days of face-to-face professional development during the year, two Saturdays throughout the year	
	They are developed as part of the TLC (Teachers Learning Conference) training program.	A 6 step application procedure ...frequent professional development opportunities...monthly discipline group meetings...three faculty face to face meetings per year	
	There is also, in terms of short term PD, we have what is called the COVE – community of virtual educators. That is where we give just-in-time training because we have identified something.		
	Teachers go through a rigorous graduate level training program to learn VHS pedagogy. The course is 22 weeks long (for a new course) or 10 weeks long (if the course is already developed) and the teachers receive one-on-one mentoring from		

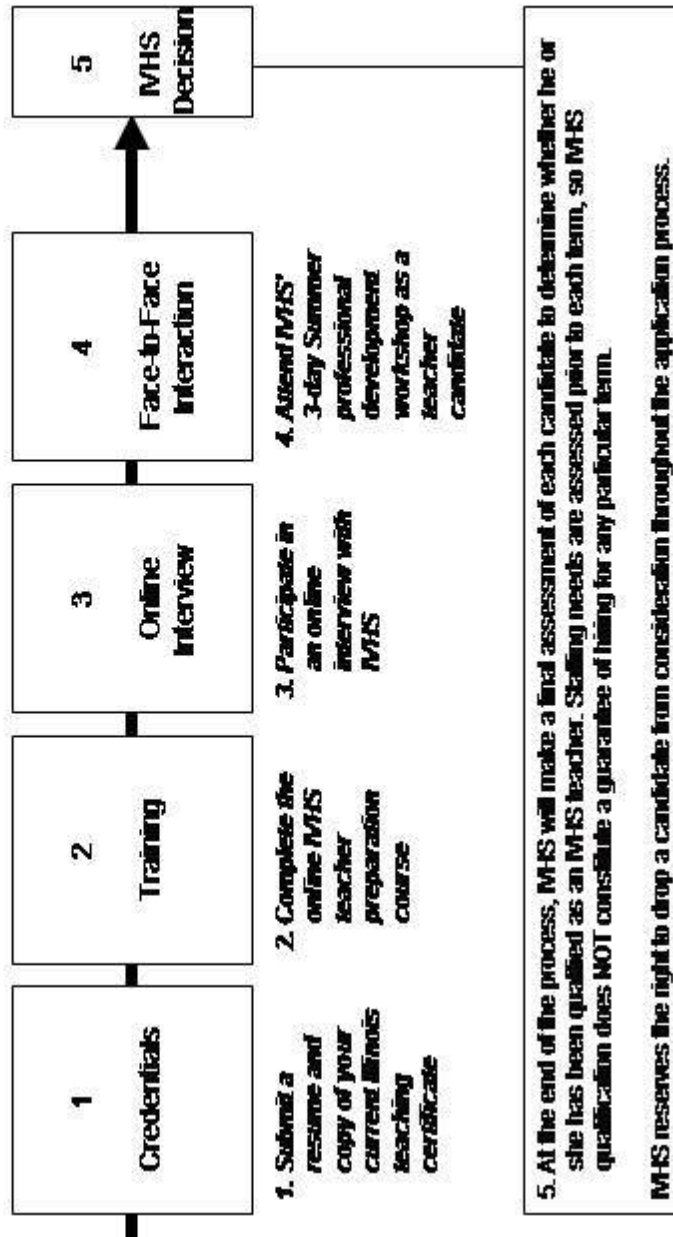
	experienced VHS teachers.		
Teachers	I know that approximately 85% of our teachers have masters and above. And I would say that most of our teachers have at least 8 years of classroom instruction	Teacher candidates are selected through a structured review of credentials and performance based assessments.	When we look for staff, we look for good teachers, excellent teachers, teachers who love kids, who love teaching because those are the ones who are successful no matter where they are at.
	All teachers are certified in their subject areas and most (over 85%) have master's degrees.	We don't have any full time teachers so they are all adjunct faculty. All teachers are Illinois-state certified. Degrees range from bachelor's to PhDs.	We prefer teachers that have experience in the classroom.
Quality Control	evaluations by the facilitator and that course is going to be evaluated against the course design standards which are numerous so there will be feedback during the course design process to do revisions if they are not meeting those standards.	Some of our benchmarks are more related to completion rate, participating schools, basically the decision to participate and be successful is an indication of quality.	Gary and I have reviewed them, overall and general and how they fit state standards and what-not before we decided to use them
	All teachers receive evaluations while in training, and also while in delivery. Courses are evaluated against VHS standards to ensure they are of the highest quality.	We also have had, on a regular basis, external evaluations of our program	They are very high quality, very capable, bright, innovative great staff so I rely on them to analyze and see "is this a course that, yeah, this is quality stuff."
	They are evaluated by their training facilitator and once teaching, they are monitored and mentored.	teachers have to go through a formal employee evaluation process	Good courses come with reputations
	So in terms of the quality of the PD experience, I measure the percentage of teachers that entered our training and successfully graduated from it because maybe we are doing something wrong.		
	how do we maintain the quality of the courses – we start off with the course design standards and then we also have indicators of the quality of the courses.		
Courses	The process for faculty written courses is the faculty goes through a 22 week training process called Teacher Learning Conference and they are	IVHS developed courses are created by teams of developers and undergo considerable quality review using an accepted set of criteria.	We use classes from Aventa which they have their own platform, but then they transition them to Bb so we use the Bb out of Greenbush and Aventa is then uploaded

	learning about online course design.		onto that. We also use Greenbush classes and those classes are up on Bb. Those are our two main ones that we use.
	As those courses are being written over the 22 week period, there are evaluations by the facilitator and that course is going to be evaluated against the course design standards which are numerous so there will be feedback during the course design process to do revisions if they are not meeting those standards.	So we have a very broad set of curriculum.	We use pre-packaged courses from different vendors.
	Faculty written courses – When a school joins VHS, they choose a teacher to teach a course online. That teacher has one of two options: to create a course in their specialty and interest area, or to modify and personalize an existing VHS course.	When we launched , we were completely prepackaged courses, simply based on that timeline. Today about half of our courses are ones we have developed and the other half are pre-packaged.	We say Hey, here is another class, another company, would you look at their courses for us, so they are constantly evaluating that. Is it meeting the kids needs, is it too hard, is it too easy, whatever.
	Teachers who are certified to teach in their course discipline develop VHS courses through the VHS professional development course, Teachers Learning Conference (TLC).		
Collaboration	COVE – community of virtual educators.	Experienced teachers mentor new teachers. There is a “department” structure that promotes collegiality.	You sit down and you start talking
	The way that we operate is that it is a cooperative so the teachers and site coordinators both remain employees of the school district that joins.	brought together some people who thought that they might have an interest.	We work together with the staff to see what is working.
	Level I review where they are very closely associated with a faculty advisor	collaboration among education and technology entities in the state.	
	The structure of Virtual High School (VHS) is that we have a central core staff operating in teams.	Monitor courses – provide support as needed – help mentors support system	

Appendix H - IVHS Teacher Application Process

IVHS Teacher Application Process

** Regardless of whether applicants are hired, steps 2 & 4 provide teacher candidates with training in the area of online teaching. IVHS is not granting CPDUs for these activities.*



Flow chart taken from the IVHS Faculty Handbook