

## CHAPTER II: LITERATURE REVIEW

### Related Literature

The current research base on the topic of online learning in secondary schools is grossly inadequate (Litke, 1998). Considering there is a sparse history of delivering online classes and a virtual explosion of new software, updated personal computer capabilities, and new instructional design models, establishing a research base has been plagued by inadequate time and consistency that is needed to produce high quality published works about secondary schools and online course delivery (Burge, 1994; Richards, 1995; Wynne, 1997). Goodyear (2001) states in his introduction to a collection of researchers' perceptions of the online learning initiatives in educational institutions that there "is very little sound research on the extent and rate of growth of online learning and teaching" (Goodyear, 2001, p. 65).

Among the few published works available, several offer useful preliminary information about online education and secondary schools (Harasim et al., 1995). One initiative that produced useful preliminary information about secondary online learning programs was the Virtual High School™. In 1996, the Virtual High School™ began offering courses to secondary students. The initial success of the program helped to create a few national and international spin-off programs (Litke, 1998). For the majority of American secondary schools, however, there are no recognized degree programs offered online (Chaney, 2001). Instead, they offer advanced placement, honors, college-preparatory courses, and some small remediation courses. Online learning programs also take the form of networking with other schools or students, enhancing the traditional face-to-face classrooms with online programs (Harasim et al., 1995). These efforts are identified as a means by which students that attend schools with limited financial resources or geographic barriers can have access to courses they would otherwise go without (Paloff, 2001). Primary research questions and hypotheses of these studies focus on the outcomes of online programs as they relate to student achievement data or student reports of satisfaction with online learning programs (Hawkins, 1996; Litke, 1998). There is little if any published research surrounding the creation and management of online programs in secondary schools (Kirby, 1998).

Post secondary institutions, on the other hand, have had a very different experience. Universities have been offering online courses for a far greater period of time and have a rich tradition of using distance education to deliver educational training (Betts, 1998; Litke, 1998). Compilations of published research surrounding online teaching and learning have recently come into light as universities consider incorporating more extensive distance education programs to reach adult learners who traditionally have been unable to receive the traditional classroom education due to time or geographic constraints (Lesh, 2000). Compilations or published research about distance education have a similar focus to the literature associated with secondary schools: student achievement and satisfaction (Lesh, 2000). Parallel to this strand of research, new confidence in the staying power of online programs enabled some researchers to expand the research base by looking at more of the spectrum included in online learning (Davie, 1996).

As a result of the expansion, new publications associated with the specific study of distance learning administration, as it is associated with online instruction, have developed. The *Journal of Asynchronous Learning* and the *Online Journal of Distance Learning Administration* are two such publications that have started to focus on the administration of online education. Together with educational technology journals, these two publications are bringing published research about online learning administration to a new level. Despite these advances, some researchers even question the strength and relevance of previous research because it has been conducted with different user groups, outdated technologies, and currently unavailable software applications (Murray, 1997). Studies of multiple online programs over a longer period of time may help clarify concerns of constantly changing software as consistent or inconsistent patterns emerge.

Taking the historical patterns of online learning research into consideration, this chapter will begin looking at related literature through a brief history of distance education delivery with a focus on the development of online learning from the late 1980's to the present systems of delivery. The next section will focus on research associated with distance education as it is delivered through online learning in a secondary school environment. The third section will present the areas of online learning administration that are currently part of the research literature spectrum. The fourth

section will revisit the model being used for this study and provide further information about its construction and components. The fifth and final section will address research about online learning faculty members and their motivations and reasons for entering and continuing their work with online education as it relates to the topic of this thesis.

#### Distance Education: An Overview

Historically, the term distance education is linked to correspondence education (Betts, 1998; Moore & Kearsley, 1996; Willis, 1993), and the origins of distance education date back over a century (Litke, 1998). In the early years of distance education, the primary method of delivery was print, referred to as correspondence education. As new technologies evolved, distance education started to incorporate new delivery devices such as audio recordings, radio, telephone communication, and television (Betts, 1998). As a result, there was less reliance on print materials and more reliance on newly developed electronic communication technology. The introduction of electronic communication technology caused a new term, distance education, to refer to newer types of educational delivery. Correspondence education was the term used to refer to education that was associated exclusively with text (Betts, 1998).

Educational delivery technologies may have evolved, but the defining elements have remained the same (Betts, 1998). Building off the work of Keegan (1986), Saba (1996) cites five inter-related elements of distance education:

- the geographic separation of learner and instructor,
- the influence of an educational entity,
- the use of technology for communication of information,
- the capacity for bi-directional communication, and
- the absence or quasi-absence of a peer group (p. 1)

Saba (1996) further asserts these elements will allow educators and learners to:

- access and use almost any information in any mode of representation;
- control the flow and display of instructional information;
- teach and learn anywhere, at any time; and
- experiment with new ideas in education as social factors change. (p. 3)

Moore and Kearsley (1996) present a more general definition of distance education as:

planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements (p. 2).

A more learner-focused definition is offered by King and Bartles (1996):

A class of methods of instruction, either formal or nonformal, that place the learner apart from the teacher, or the learning and practice detached by time and/or space from the teaching and the instruction. Communication channels and media such as computers and associated networks, print, audio, cable, satellite or videotape or combinations of these media are required to bridge the time and distance. (Retrieved November 12, 2001 from A review of educational characteristics of successful distance education efforts—CD-ROM).

Several commonalities are present in these definitions of distance education: a focus on the learner, communication exchange, issues presented by the instructional strategies chosen to deliver the information, and the educational ends to be achieved.

When the term distance learning is interchanged with distance education, confusion often develops. The terms are not synonymous. Steiner (1997) helps provide clarity for the terms by identifying that distance learning results from distance education.

To facilitate distance learning, distance education uses two types of delivery techniques: synchronous and asynchronous. “Synchronous instruction requires the simultaneous participation of all students and instructors” (Steiner, 1997). It provides “real time” learning in which the learning and presentation of the material are happening due to the simultaneous participation of learner and teacher. Asynchronous instruction does not require the simultaneous, “real-time” experience. Instead, students are able to use their own schedule to collect material and choose their personal time frame to interact with the materials (Steiner, 1997). Distance education, as well as online education, can

be both synchronous and asynchronous. Both delivery methods have become incorporated into many courses with the introduction of new technologies (Litke, 1998).

In the past two decades, distance education has experienced another technological introduction: the computer. Introduction of the computer placed a new delivery technology into the distance education arena. “There is little doubt that online education evolved mainly from the domain of distance education” (Litke, 1998, p. 15). Universities first facilitated online learning, and one of the earliest specific programs to deliver educational services and research the results was the Virtual Classroom™ offered by NJIT (New Jersey Institute of Technology) in 1985. The program was facilitated and researched by Roxanne Hiltz (1995). Her research broke ground in an area where she was one of the first formal researchers. Hiltz formed eleven hypotheses ranging from there being no difference in scores measuring material mastery from the traditional classrooms to the virtual classroom to there being an increase in the access and effectiveness of college level education. Hiltz found the online mode of delivery “can increase access to and effectiveness of college-level education” (p. 166). Hiltz also noted that the online program was not without its disadvantages. Specifically, Hiltz identified the incredible amount of time and energy required of instructors when teaching in the online environment.

With the introduction of the Virtual Classroom™ as an object of research and the growth of online programs, more research on online learning as its own entity under the umbrella of distance education has been published. The majority of early research involved comparison studies (Litke, 1998). “Comparison studies, specifically, seem to be designed primarily as tools for promoting online programs as viable alternatives to traditional classroom instruction rather than being designed for adding to the body of knowledge in the area” (Litke, 1998, p. 27). These comparison studies lead the first wave of research. From these, research branched into the roles of the instructor and the variance in the traditional and virtual environments.

Research conducted by Harasim, Hiltz, Teles, and Turoff (1995) presents observations of the role of the teacher in online education. The major findings these researchers identify is a shift from the teacher-centered classroom to a more student-centered pedagogical approach. They identify the teacher as activity planner who is

following the flow of the student conversations. During the conversation, the teacher offers suggestions and guidance placing the primary focus on an improvement and/or development in a student's thinking process as well as focusing on the collaborative learning experience (p. 174). Likewise, Feenberg (1993) and Freeman and Ryan (1997) identify a similar change in the role of the instructor for those instructors who have traditionally been more teacher centered in their instructional delivery mode.

As for the experience of the instructor entering the online learning classroom, two factors have been very prevalent in the literature. The first is clear evidence from multiple researchers that teachers experience a large increase in the workload when creating and implementing an online class; second is the lack of faculty familiarity and/or experience with online learning environments. Harasim et al. (1995), Gabriel (1993), Care (2001), Hussman (2001), and Rockwell (1999) identified a very clear factor that teachers experience when teaching online classes: the workload increases greatly. Part of the workload gain was attributed to a need to learn new technologies and adapt the course materials to be displayed on various software programs, whiteboards, and word processing programs. Part of the increase in workload was also attributed to the need to communicate with each student and respond to messages usually within twenty-four hours to ensure the continued participation of class members (Harasim et al., 1995). Feenberg (1993) identified another problem facing instructors as they learn to navigate the online environment: few if any instructors had experience as learners in a virtual school situation. This problem was compounded further when novice online instructors repackaged traditional classroom material with little or no adaptation that acknowledged the different format of the online classroom environment (Ryan, 1997).

Student achievement was the area that received more attention in distance education research. Most of this work has been conducted at the university level. Burge (1993), Harasim (1990), Kearsley et al (1995), Richards (1995), and Hussman (2001) attest to the satisfaction and achievement students have when they complete online programs. In general, students who performed well in traditional classrooms also performed well in online classrooms, and were generally satisfied with their online experience. The factors that drew students to the online courses were geographic location, lack of available time to meet the preset university schedule, and learning style. Also a

factor in drawing students to online courses was a fascination with technology (Burge, 1994, p. 100).

The environment and social aspects online students experience is another strand of research that has developed. As indicated by skeptics of the effectiveness of online classes to deliver an effective social environment, there was some concern that the lack of peer interactions could have a negative effect on online learners (Gordon, 2000). Countering this concern is early research about online learning environments that highlighted the benefits of anonymity and one-on-one communication as increasing the equity in online courses (Collins and Berge, 1995, Chester and Gwynne, 1997). These researchers along with Kearsley, Lynch and Wizer (1995) look at the end achievement results and satisfaction with the programs as an indication that “online learning activities are well suited for graduate education” (p. 37).

#### Distance Education as Online Learning in Secondary Schools

Many studies have indicated that technology can positively influence student performance in the classroom (Clark, 2000). One study conducted by the Milken Exchange identified that “eighth graders whose teachers used computers mostly for ‘simulations and applications’—generally associated with higher-order thinking—performed better on NAEP than students whose teachers did not. Meanwhile, eighth graders whose teachers used computers primarily for drill and practice—generally associated with lower-order thinking—performed worse” (Wenzel, 1998, p. 3). Despite the growth in computer use and the knowledge that technology can have a positive impact on student achievement, many investigations about computer use in the classrooms have concluded that “instructional technologies are not used by most teachers” (Clark, 2000, p. 179). In fact, the most common “teaching technology in the United States eighth grades is the overhead projector” (Gordon, 2000, p. 73).

While the present state of educational technology use may not be high, there is recent information that identifies a new direction in educational technology as it relates to funds used to purchase educational technology. In The Digital Classroom: How Technology is Changing the Way We Teach and Learn, Glenn Kleiman in his article “Myths and realities about technology in K-12 schools” identifies that “...schools spent an estimated 6.9 billion in 1999 on desktop computers, servers, routers, and everything

else involved in computing” (Gordon, 2000, p. 7). He identified this investment as one that is grounded in the potential of these new technologies to help increase student achievement and instructional delivery.

With this new technology influx, elementary and secondary schools began participating in distance learning projects that provided math, science, foreign language and other courses to students—courses that would otherwise not be available because certified teachers could not be located locally or student demand for the courses was not enough to justify holding the course or hiring a full time teacher (Kirby, 1998). As expected, some see incredible potential for new technologies to allow public education to increase student achievement, reach more learners who may be geographically separated from schools with advanced placement courses, and offer a variety of choices to students who are not finding courses offered at their schools which may be offered at others. Knowing the amount of investment in educational technology, it is no wonder that agencies are asserting that the “public is looking for a return on its investment (Miliken Family Foundation, [http://www.mff.org/edtech/article.taf?\\_function=detail &Content\\_uid1=275](http://www.mff.org/edtech/article.taf?_function=detail&Content_uid1=275)) Accountability and potential in mind, the United States Department of Education set out to establish a project to explore the use of online learning at a secondary level. The Virtual High School (VHS) was established by the United States Department of Education in 1996.

VHS began with a 7.5 million five-year Technology Innovation Challenge Grant from the United States Department of Education. It was introduced to the general public and solicited membership schools to participate in its program. In its first three years, the number of high schools participating in the VHS program grew from 30 to 120, including 26 states. As of the 1999-2000 school year, 107 teachers taught 87 courses to approximately 1,800 students nationwide. Participating schools included a broad array—rural farming, urban, and suburban communities; college prep; two schools for the deaf; and six international schools. Growth continues to occur at VHS, and their numbers of participating schools are still on the rise (<http://www.goVHS.org>).

In addition, many online programs are developing in school districts across the nation. Illinois, Maryland, Michigan, New Mexico, Utah, and West Virginia have all

started or are planning to start online learning programs. California, Florida, Indiana, Kentucky, Massachusetts and Nebraska already have programs in place (Chaney, 2001).

While action research may be taking place in these programs, little published research is available on the effectiveness and administration of these online learning programs at the secondary level. Dissertation work has examined programs at the middle level (Litke, 1998) and program evaluations completed with a state secondary online course initiative in Dutchess County New York.

The work done with Dutchess County New York followed the progress of a distance education program organized by the Dutchess County Board of Cooperative Services that included at least one high school in twelve of the thirteen member school districts. Data collection took place throughout the 1994-1995 school year under the supervision of The Center for Children and Technology. The findings of the studies were reported in 1996, and they included extensive findings. A summary of these findings follows.

First, it was central to the project that administrators, teachers and students saw the importance of the innovation. In fact, most considered distance learning to be an important part of the future of education. In further detail, teachers even went as far as identifying distance learning as a way to expand their professional expertise (Hawkins et al; 1996).

Second, few differences were discovered in the pedagogy. The pedagogy in the distance learning classes was not notably different from that of the traditional classes. Classes were still dominated by teacher lectures, and exercises and assignments were similar to those in traditional classes. The biggest pedagogical concern was about “the lack of science labs in distance learning classes” (Hawkins et al; 1996, p. 2).

Similar to the pedagogy, there was very little difference in student achievement when comparing concept mastery in traditional and online classes. “Students’ achievement in distance learning classes was not substantially better or worse overall when students’ numerical grades in each DL class were compared with each student’s cumulative average, or when compared to those of students in a traditional class” (Hawkins et al, 1996, p. 2).

One significant finding was that there was no evidence to show that a lack of face-to-face interaction had a great effect on a student's satisfaction with the course or his/her sense of participation or belonging (Hawkins et al, 1996). As systematic observations of the online environment indicated, “participation by both teachers and students (talking, lecturing, asking and answering questions) is very similar for DL and traditional classes, with the exception that there is a trend toward shorter turns for students in DL compared with non-DL classes” (Hawkins et al, 1996, p.3). If anything, a difference in participation levels was experienced more in relation to the type of course, and the particular teacher, than to the technology by itself. This finding would indicate that critics of online programs who state concerns about the potential lack of nonverbal communication and sense of belonging to a classroom environment are operating under unsubstantiated concerns.

An unexpected and disappointing finding was that the students who demonstrated the most difficulty with the DL courses were special education students. Administrators envisioned an environment where students could participate on an equal basis and have a stronger sense of inclusion. However, the results experienced from this program produced a higher dropout rate of special needs students than in traditional classes (Hawkins et al, 1996, p.3). Initial analysis of the special education population seemed to indicate that the online environment was not as good an environment to offer necessary accommodations and modifications as a traditional classroom. Special education students expressed frustration with the delivery system and the curriculum because of the lack of modifications and accommodations.

A final finding was that teachers felt that they would like more opportunities for professional development in distance learning. Most identified learning more advanced instructional techniques for the system, integrating supplementary technologies like multimedia, and experimenting with innovative pedagogy as high priorities.

#### Distance Education Administration

As stated previously in this chapter, there is little information available about effective secondary schools online learning programs. The majority of the research

continues to be conducted in post-secondary institutions. This is also true in the area of distance education administration.

At present, there is a stream of new research on effective delivery of distance education programs at the post-secondary level. Hussman and Miller (2001) and Rockwell et al. (2000) have attempted to take a broad overview of the current research being conducted in distance learning administration and sought input from practicing administrators as to the current and future needs of new distance learning administration research.

Rockwell et al. (2000) used a Delphi technique to identify and rank future research/education needs/issues as they were related to distance education. Four themes emerged: “cooperation and collaboration among institutions, designing the educational experience for the distance learner, faculty preparation and recruitment, and educational outcomes” (p.1). Work conducted by Hussman and Miller (2001) also used a Delphi technique to question distance education administrators about their perceptions of variables and factors necessary for effective distance education programs. Results from this study demonstrated high agreement among administrators that quality online programs should encourage a customer orientation.

In these studies, administrators also identified a strong need to provide additional support for faculty development of course materials. There was strong agreement with “providing a reward system which acknowledges faculty participation in distance education, promoting the involvement of quality faculty who are enthusiastic about distance education, and creating a reward system which allows faculty to be involved in distance education” (Hussman and Miller, 2001, p. 3). Administrators also supported the concept of providing special grants to pioneers of educational technologies, creating a reward system which recognizes faculty members who are using creativity in distance education teaching, and promoting distance educating techniques as a method of complementing the “academic department’s mission and assuring cost-competitiveness” (p. 3).

### Distance Education Delivery Model

As identified previously in this chapter, the literature around the topic of secondary school online learning is very limited (Litke, 1998). Most of the present literature base involves work being done at post secondary institutions that are developing online learning programs to reach larger numbers of students (Litke, 1998). As will be discussed in further detail later in this chapter, most of the literature is focused on outcomes from distance education programs. Studies in the past three to four years have started to take a different topic into consideration: inputs into the online learning system. One specific topic of interest in this area is the experience of faculty who teach online courses (Betts, 1998).

As a component of a much larger system, faculty experiences in delivering distance education courses is a critical factor in the success or failure of a distance education program (Harasim, Hiltz, Teles, and Turoff, 1995). Of course, delivery of a distance education course is not solely dependent on faculty instruction. There are a number of other inputs and influences that affect distance education. James King has worked extensively to identify elements of the distance education system and identify the interrelations of these elements.

Some of the initial work King published explored the topic of distance education decision-making and policy formation. King based his initial work on research done by Gellman-Danley and Fetzner (1998) and Berge (1998). They identified nine policy arenas related to distance education: academic, fiscal, geographic, governance, labor-management, legal, student support services, technical, and cultural (King et al., 2000). These arenas identify for decision makers essential, large policy areas. In this respect, they can be considered “strategic management decision zones” (p. 2).

Gaining a perspective for how these “zones” work in conjunction with one another can be represented in models of operation. Along with Gary Frantz, James King designed a Distance Education Learning Systems Model (Figure 1) that utilizes a systems approach as a “powerful tool to connect and interrelate people goals, organizations, and technologies in the educational playing field” (Frantz and King, 2000 p. 33).

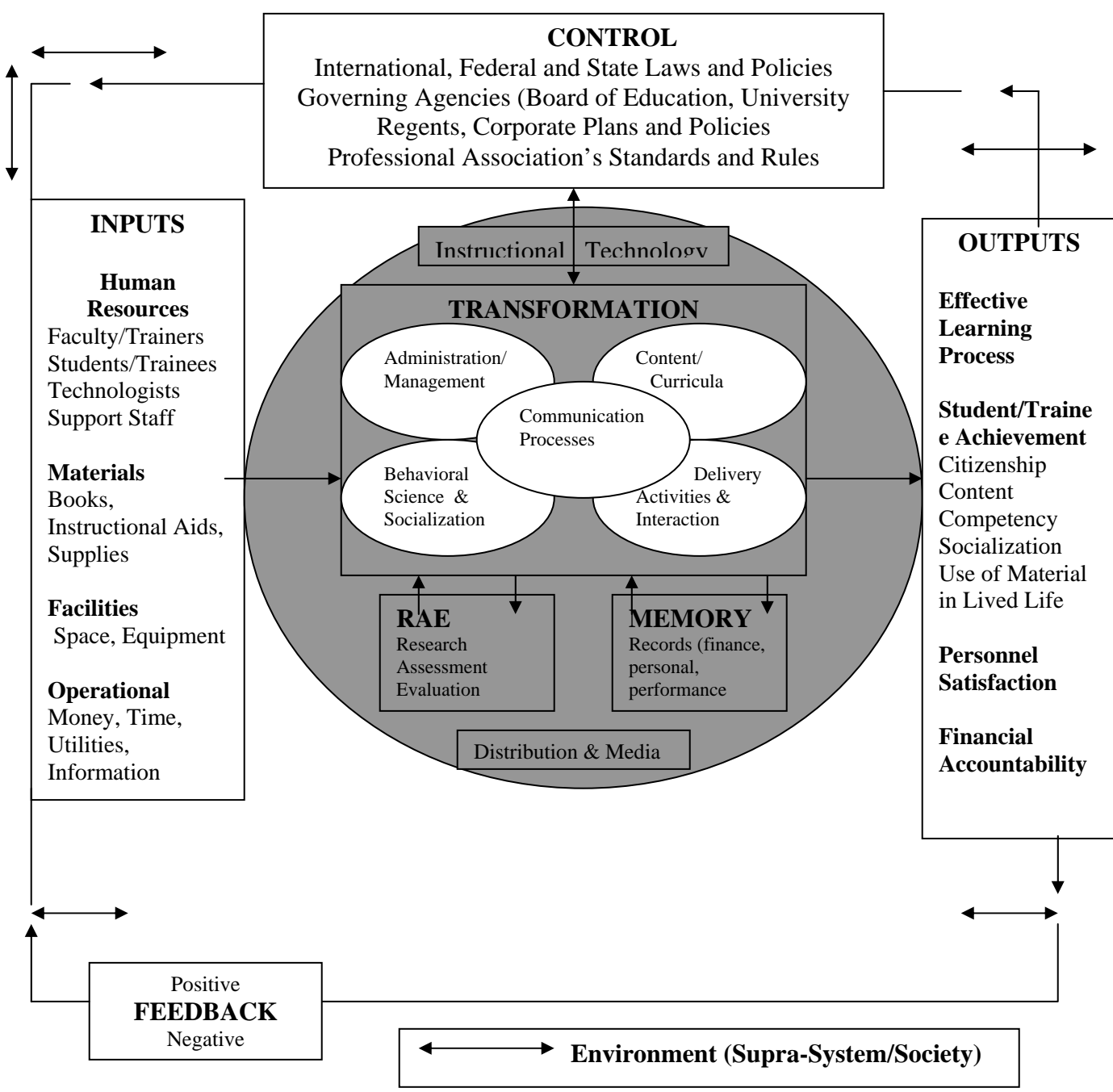


Figure 1: Distance Education/Distance Learning (DEL) Systems Model

Using the instructional systems work of Banathy (1968), Frantz and King developed a model of distance education that incorporated three perspectives: “system/environment—a large scale bird’s-eye picture of the distance education landscape; functions/structure—what the system is and does; and process/behavior—how distance education and learning act in a changing, living social system” (p. 33). Embedded in these three perspectives are many elements that are unique to each perspective. Frantz and King incorporated essential elements from the three perspectives to develop the DEL model.

Also present in the model are the expected elements of inputs and outputs. In the DEL model, traditional elements of inputs and outputs are directly affected by outside control agencies and policies. Specific inputs such as human resources, materials, facilities, and operational capital are placed in a transformational process that involves content and curricula, administration/management, behavioral science and socialization, interaction and delivery activities, and communication processes. The transformation process is influenced by control agencies; research, assessment and evaluation; and memory in the form of financial, personnel, and performance records. The transformational process of administration/management, socialization, communication, development of curriculum, and delivery of instruction interacting with inputs of human resources, materials, facilities and their maintenance yields student/trainee achievement, personnel satisfaction, and financial accountability. Affecting the entire model are methods of feedback and environment (supra-system/society).

Frantz and King identify the transformation process as the “heart of the model” (p. 37). As mentioned in the previous paragraph, the five elements of content and curricula, administration/management, behavioral science and socialization, interaction and delivery activities, and communication processes interact with inputs. Curriculum specialists design the learning models and units. They are also responsible for installing standards of performance and evaluation criteria, and ensuring proper measurement of the objectives. The administrative/management element interprets the controls, staffs the program, provides motivation and vision, and is actively involved in knowing the market, audience, and financial resources available to the program. Behavioral science and

socialization enter the process through planning activities such as introductions, cooperative work and dialogue, and integration of proper communication procedure in online environments. Interaction and delivery activities have always been a part of the instructor's role in a classroom. In the distance arena, the choices are broader. Internet and video based education are best delivered through coaching and facilitating more than the traditional teacher-lead approaches of the past. Distance education instructors need to have an advanced awareness of the facilitation and feedback mechanisms available in online environments to best reach their learners. Communication is best described as the element that links all of the other elements together. It is also directly connected to the evaluation and continuous improvement parts of the model.

The purpose of this model, as Frantz and King explain, is to “present a practical Distance Education Learning Systems model that can be used by private and public education faculty and administrators, organizational and business managers/trainers, and consortium planners alike” (p. 33). The application of the model is a tool to assess current distance learning applications. As such a tool, it is intended to “overlay” onto current delivered course programs and help to provide an insight into possible system shortfalls (p. 39). The authors suggest that this model can also be used as a template to help assist planning a new distance education course program.

One particular component of this model has had further discussion in related literature: faculty involvement. As an input identified by this model, faculty are a critical component of any educational system. As such, there has been recent work in determining the factors that draw faculty members to participate in distance education programs and what obstacles prevent faculty from participating.

### Faculty Participation

A key component of any distance education program is the faculty who are responsible for delivering the instruction (Beaudoin, 1990; Betts, 1998; Kaye, 1989). Recent research has explored reasons for faculty participation or nonparticipation and incentive/reward structures necessary to increase faculty participation in distance learning programs at the post-secondary level (Betts, 1998; Paloff, 2001; Rockwell, 1999; Willis, 1993; Wolcott and Betts, 1999). Prior to these studies, there was a lack of quantity and

quality of research on faculty involvement in distance education (Dillon and Walsh, 1992).

To a large extent, the success of a distance education program lies with the faculty and the rate at which they accept and adopt new technologies and innovations (Willis, 1994). Likewise, faculty resistance to instructional technology is identified as a primary barrier to the continued growth of a distance education program (Betts, 1998; Gunwardena, 1990; McNeil, 1990; Rogers, 2000; Schifter, 2000).

Researchers identify faculty resistance as having internal and external sources (Rogers, 2001; Schifter, 2000). Rogers (2001) identifies internal resistance as “teacher attitude or perceptions about technology and a person’s perceived level of technology competencies” (459). External sources of resistance Rogers (2001) identifies include “availability and accessibility of necessary hardware and software, the presence of technical personnel and institutional support, and a program for staff development and skill building “ (459). Resistance has also been linked to institutional barriers including: increased workload, lack of time, lack of skills or knowledge, lack of incentives, and concerns about reduced student interaction (Betts, 1998; Clark, 1993; Dillon and Walsh, 1992; Gilbert, 1996, Olcott and Wright, 1995, Verudin and Clark, 1991).

Barriers to adopting new technologies have been identified to include, but not be limited to, insufficient time to learn how to use technologies, insufficient skill, little or no access to training or technical assistance, lack of compelling reasons or need to use new technologies, personal incompatibility, and cultural incompatibility (Dunham et al., 1996). Personal incompatibility as defined by this study is very clearly aligned with the factors identified by Rogers (2001) in her previously mentioned research. Cultural incompatibility as defined by Dunham et al. (1996) includes environmental issues such as slow Internet connections, limited training, or limited technical support.

A study conducted by Fred Lockwood (2001) took a more broad view of examining barriers and expanded the scope of distance education beyond university settings to also include development aid projects, business, industry, and public services (such as police and military forces, social welfare and health services). His study reflects “the experience of 426 individuals who were involved in introducing and implementing a wide variety of new ODL courses” (p. 16). Through email message boards with 102 self-

selected members of the 426 individuals involved, Lockwood tracked the topics of discussions about issues raised. The major themes that developed, in order of priority, were resource availability, organizational issues, human resource capacity, and use of technology (p. 16).

In the area of resource availability, Lockwood (2001) uncovered strong views that distance education efforts were under resourced in financial and human terms and that senior decision-makers often required implementation within unrealistic time-scales. In addition, study participants perceived that senior decision makers did not understand the “real costs involved with distance education programs as well as not adequately assessing the market for distance education projects” (p. 17).

Organizational aspects included a perception from course instructors that there were few rewards or incentives. Instructors identified significant additions to existing workloads and noted that internal policies associated with distance education were weak. Instructors also identified that there was a feeling among distance education staff that other members of the organization often perceived distance education as a marginal activity.

Human resource capacity concerns centered on inadequate staff knowledge of distance education practices, with “self-help” identified as the primary means of getting information (Lockwood, 2001, p. 17). Staff development, according to participants, was often seen as too little, too late and proper budgets were not presented for adequate staff development experiences. A final obstacle identified in extending the capacity more widely among organizational members was a negative attitude toward distance education, largely due to the additional workload involved.

Another factor uncovered by Lockwood corroborates previous findings about barriers to participation: a strong belief in institutional policies toward distance education increases a faculty member’s willingness or refusal to participate in a distance education program (Dillon and Walsh, 1992; Olcott and Wright, 1995; Yong and Wang, 1996; Hussman, et al. 2001, Rockwell, 2000). Faculty members who were an integral part of the creation of distance education policies are more likely to stay with a program (Wong and Yang, 1996). As a part of the policy making process, studies demonstrate that organizations need to: provide training through faculty development programs (Betts,

1998; Care et al., 2001; Diagle and Jarmon, 1996; Hussman and Miller, 2001; Litke, 1998; Moskal, Martin, and Foshee, 1997; Rockwell, 1999; Rogers, 2000; Warren, 1997; Wolcott and Betts, 1999); provide faculty support—both technical (Rockwell, 1999; Seldack and Cartwright, 1997) and administrative (Gilbert, 1996; Hussman and Miller, 2001; Willis, 1994); and reevaluate current incentive and reward structures (Betts, 1998; Diamond, 1993; Olcott and Wright, 1997; Wolcott and Betts, 1999).

As critical as it is to understand barriers to faculty participation, it is also essential to examine incentives that encourage faculty participation. According to Sedlack and Cartwright (1997), research in the area of encouraging faculty to participate in emerging technologies is far less developed than the exploration of participation barriers and needs to be explored.

One consideration that incentive structures need to address is the amount of work that an instructor engages in when developing an online course. “One of the truisms of distance education is that teaching a distance course involves a considerable amount of work” (Wolcott and Betts, 1999, P. 35). The “work” Wolcott and Betts identify often has “hidden” characteristics such as “creating extensive course materials, communicating with off-campus students, and coordinating clinical experiences” (p. 35). Harasim et al. (1995), Gabriel (1993), Hussman (2001), Rockwell (1999), and others also identify a clear increase in the workload experienced by distance education instructors. This presents a very clear consideration for organization administrators: What incentives or rewards can organizations offer to offset or acknowledge the increase in workload. Research about reward structures has produced interesting results.

Wolcott and Betts (1999) results were contrary to expectations: faculty members were not enticed to teach distance education courses by the promise of some external reward such as a stipend, merit pay, a promotion, or an award. The top five motivating factors as rated by faculty participants surveyed by Betts (1998) in her dissertation work were all described as intrinsic rewards. Those top five factors were: the ability to reach new audiences, the opportunity to develop new ideas, a personal motivation to use technology, and intellectual challenge, and overall job satisfaction.

Additionally, it was found that distance education held a strong appeal for faculty who were intrigued by technology and motivated by “the opportunity to learn to use and

integrate telecommunications systems into their teaching” (p. 37). These faculty members were likely to be recruited to distance education and characterized themselves or were so characterized by their peers as “early adopters,” “innovators,” “risk takers,” or “adventurous” (p. 38). These descriptions are consistent with what Jaffee (1998) and Rogers (2000) identify in reference to a sociological model of a normal distribution of technology adoption patterns linked to internal barriers of attitude and perception. Rogers and Jaffe identify about three percent of any population as “innovators,” fourteen percent as “early adopters,” thirty-four percent as “early majority,” thirty-four percent as “late majority,” and fourteen percent as “laggards” (p. 463). It can be expected, therefore, that a limited number of persons will consider participating in an innovative program early in its development.

The final conclusion of Betts’ work was similar to results found by Wolcott (1995) and Taylor and White (1991) in earlier studies (Wolcott and Betts, 1999): “internal factors exert a stronger influence on faculty’s motivation to participate in distance education than do external factors” (Betts, 1998, p. 39). Data also suggests that “although intrinsic factors may effect initial involvement, a faculty member’s motivation and subsequent response to incentives may change following the experience of teaching a distance course” (p. 39).

A study conducted by Rockwell, Schauer, Fritz, and Marx (1999) attempted to uncover what faculty felt were incentives and obstacles to participation in distance education teaching. Again, results indicated that the primary incentives for faculty to become involved in distance education were personal or intrinsic rewards rather than monetary rewards. Included in the list of incentives was the opportunity to provide innovative instruction, use new teaching techniques, and receive recognition for their innovative work. Monetary rewards were seen as neither an incentive nor an obstacle to participating in online teaching.

Considering incentives as well as barriers, Betts (1998) identifies a key understanding related to faculty participation, “Faculty are more likely to participate in distance education if inhibiting factors are eliminated by the administration, and the intrinsic benefits involved in distance education are stressed by the administration” (p. 10). Administrators are starting to take this information into consideration as

demonstrated by the results of the Delphi studies conducted by Hussman and Miller (2001). As mentioned in a previous section, post-secondary administrators are now more aware of the extra work required to conduct a distance education course. Hussman and Miller (2001) found that administrators support the concept of special grants or reward systems that assure proper recognition and compensation for instructors' efforts. Incentives such as the provision of in-house grants for course development and training activities, reduced teaching loads while teaching online courses, and adequate support to assist with course development and delivery are some of the newer methods administrators are using to enhance the likelihood that a faculty member will be willing to teach a distance education course (Palloff, 2001).

### Technology Standards

The International Society for Technology in Education developed technology standards for administrators, teachers, and technology facilitation. These standards represent a "national consensus among educational stakeholders of what best indicates effective use of technology in schools" (<http://cnets.iste.org/tssa/framework.html>). The audience to which these standards must communicate are inclusive of school boards, higher education faculty, human resources staff, policy makers, and staff developers to name a few. The standards for administrators are included in Table 2.

The standards provide educational administrators with information to use when developing plans and programs. As Strategic and Comprehensive Technology plans are becoming part of a school's planning process (Bates, 2000), technology is directly related to schools' operational practices. Inclusive teams or committees have been formed to develop policies and plans for schools regarding online courses and programs are becoming a part of organizational infrastructures (Palloff, 2001). Policies that address faculty participation are being redesigned to align with rewards and incentives to increase faculty participation in distance education programs (Gold, 2001; Kang, 2001). All of these factors point to a modification of practice and policy that could use the ISTE standards to guide their work.

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Table 2

ISTE National Educational Technology Standards for Administrators

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**I. Leadership and Vision**

Educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision.

**II. Learning and Teaching**

Educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching.

**III. Productivity and Professional Practice**

Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others.

**IV. Support, Management, and Operations**

Educational leaders ensure the integration of technology to support productive systems for learning and administration.

**V. Assessment and Evaluation**

Educational leaders use technology to plan and implement comprehensive systems of effective assessment and evaluation.

**VI. Social, Legal, and Ethical Issues**

Educational leaders understand the social legal, and ethical issues related to technology and model responsible decision-making related to these issues.

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In addition to standards for educational administrators, two other sets of standards have also been recently developed by ISTE. Technology standards for teachers is another document that has recently been produced (ISTE, 2001). It identifies six standards and performance indicators for teachers. The six standards are identified as follows: Technology operations and concepts; planning and designing learning environments and experiences; teaching, learning and the curriculum; assessment and evaluation; productivity and professional practice; and social, ethical, legal, and human issues. ISTE has also developed a set of standards and performance indicators for technology facilitation (ISTE, 2001). This set of standards expands on the teacher set recognizing that there are instructional staff who serve as building/campus-level technology facilitators. Facilitators provide an advanced level of support and application of technology within a classroom, building, or district. The set of standards that applies to this group and the performance indicators associated with each of the standards is included in Appendix H. This set of information would be a support to individuals who are designing training programs and other staff development experiences in the area of online learning.

#### Educational Change

As with any new undertaking, the change process is a critical consideration for a new initiative focused on distance education. Past perceptions of change tended to view implementation of an innovation or new program as a “one-time announcement” (Hall, 2001, p. 4). However, research about change and innovation adoption reconceptualizes change as a process, not as an event (Hall, 2001; Fullan, 2001). Recognized as a process, there are fairly predictable stages when undertaking change or innovation in educational settings. Berman and McLaughlin (1976) conducted early work in identifying phases involved in change processes. The three phases they identified were initiation, implementation, and incorporation. Subsequent work done by Marsh and Odden (1991) and Fullan (1991 and 2001) reaffirm the three phases and add more detail to the characteristics involved in specific phases.

The first phases, initiation, involves conceiving and constructing plans and programs, securing resources, making decisions about the structure of the innovation, and investigating and researching. Implementation involves turning the plans into practice.

According to Berman and McLaughlin, implementation occurs when the "project confronts the reality of its institutional setting and the project plans must be translated into practice"(1976, p. 349). Incorporation, institutionalization, and continuation have all been used to describe the third phase of the process. When the program or project loses its identification as a "pilot" program and becomes part of the practice, it is considered as one of the three terms that have been used by the identified researchers.

While each phase of the process must be intentionally addressed, each author emphasizes the critical importance of the implementation phase. Implementation is the process that directly affects the outcome. If implementation is not carefully designed and supported, the innovation or adoption is not very likely to be successful (Fullan, 2001). Fullan (2001) identifies the central elements of implementation to include: (1) organizational accommodation, staffing, and administrative support, (2) a focus on curriculum and instruction, (3) supplies and materials, (4) scheduling and grouping, (5) monitoring of student progress and performance, and (6) family and community support (p. 56). All of these items Fullan identifies as a "system of variables" (p. 71) that interact to determine success and/or failure of an educational change.

In addition to Fullan's work, models that identify the specific pattern(s) of adoption that result from the use of a new innovation have also been developed. Hall and Hord identified, verified, and defined eight different levels of use of a new innovation. These levels of use are an important feature of their Concerns-Based Adoption Model (CBAM). Hall and Hord's work with this model has also been used to corroborate a Level of Technology Implementation (LoTi) Framework by Christopher Moertsch (<http://www.rmcdenver.com/useguide/cbam.htm>). Appendix G contains the rubric that was developed at RMC Research Corporation as a merger of CBAM and the work done by Christopher Moertsch.

The LoTi framework parallels a CBAM framework and can be used to assess the levels of educational technology use for building staff members. The LoTi framework was helpful to the researcher as a source of information that assisted with the determination of a level of technology use for all of the participants in this study prior to the start of their work with the online course development and delivery program.

## Professional Development

In this study, issues of implementation were of particular interest. For this particular study, the focus was understanding the factors that influence secondary faculty participation as instructors in the educational innovation of online learning. Of specific interest were faculty perspectives on the experiences as they began learning about developing and implementing a new method of curriculum delivery. Another critical factor in successful program implementation is professional development, discussed further below.

There is a strong and growing base of literature on effective practices for professional development. It is a critical element of any educational improvement or change process. When implementing online learning, as in most program innovations, the teacher is the person who is ultimately responsible for the local success of the innovation (Fullan, 2001). Researchers have been very clear in their findings considering change and teacher involvement in the respect that “change efforts that do not involve teachers and changes that threaten to lessen their control over teaching, learning, and other aspects of schooling can have serious consequences for school effectiveness” (Sergiovanni, 1995, p. 284). With teachers being the key focus of this study, understanding critical elements of teacher professional development aid in understanding it as a variable in the implementation phase of educational change.

Sparks and Hirsch (1997) in “A New Vision for Staff Development” identify that a paradigm shift is needed for staff development practices. This new paradigm identifies staff development as an effective action when it is ongoing, purposeful, tied to student achievement, and job-embedded. Effective staff development programs have a clear, coherent plan for staff development activities that are directly tied to district mission, goals, and objectives. This plan should outline the methods used to bring staff together in working toward “the achievement of a manageable set of student outcomes that the entire system values” (p. 25). It is also critical, according to Sparks and Hirsch, that it be recognized that staff development is at the center of any educational reform. Without effective staff development, reforms or innovations are “merely good ideas that cannot find expression” (p. 25).

Effective staff development programs that are aligned with the learning needs of faculty participants enhance the effectiveness of educational change. Thomas Guskey, in “Evaluating Professional Development,” notes that:

What is required for success in professional development is a clear and compelling vision of the improvements needed, combined with explicit ideas on the organizational characteristics and attributes necessary for success. If changes at the individual level are not encouraged and supported at the organizational level, even the most promising innovation will fail (2000, p. 21).

Along with the vision, Guskey also identifies that effective staff development programs have intentional evaluation mechanisms in place to monitor the success of the professional development as it relates to desired outcomes.

The National Staff Development Council has recently published revised standards for staff development (2001) to guide the development of effective staff development practices. The twelve standards are categorized as context, process, or content standards. The three context standards focus on a supportive context or environment that supports continuous learning and improvement. These standards are identified as learning communities, leadership, and resources. The six process standards focus on the “how to” of designing and facilitating effective staff learning experiences. These standards are identified as data-driven, evaluation, research-based, design, learning, and collaboration. Finally, the three content standards identify common content emphasis for staff development among all levels of school. Content standards include equity, quality teaching, and family involvement. The standards are presented in Table 3.

Specifically, the standards were considered in interview question construction and in the analysis of findings related to the perceived effectiveness of the staff development used to train study participants. The four standards that were used were the learning communities, leadership, resources, and design standards. The learning communities standard applied to the training participants received. The majority of training study participants had a small group learning experience with colleagues. The leadership standard was considered as the leadership of the training was anticipated to be a key factor in the success and or difficulty of the training experience as perceived by study participants. In addition, the design standard was used to help analyze what

learning strategies study participants found most helpful during their training experience. Finally, the resources standard was helpful in understanding what if any additional supports or resources would enable more participants to complete the online course development and delivery program.

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Table 3

National Staff Development Council's Standards for Staff Development

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**CONTEXT STANDARDS**

Staff development that improves the learning of all students:

...organizes adults into learning communities whose goals are aligned with those of the school and district. (Learning Communities)

...requires skillful school and district leaders who guide continuous instructional improvement. (Leadership)

...requires resources to support adult learning and collaboration. (Resources)

**PROCESS STANDARDS**

Staff development that improves the learning of all students:

...uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement. (Data-Driven)

...uses multiple sources of information to guide improvement and demonstrate its impact. (Evaluation)

...prepares educators to apply research to decision-making. (Research-Based)

...uses learning strategies appropriate to the intended goal. (Design)

...applies knowledge about human learning and change. (Learning)

...provides educators with the knowledge and skills to collaborate. (Collaboration)

**CONTENT STANDARDS**

Staff development that improves the learning of all students:

...prepares educators to fully understand and appreciate all students, to create safety, orderly and supportive learning environments, and to hold high expectations for their academic achievement. (Equity)

...deepens educators content knowledge, provides them with research-based instructional strategies to assist students in various types of classroom assessments appropriately. (Quality Teaching)

...provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Family Involvement)

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## Conclusions

The research literature on secondary online programs is scarce. As an educational innovation, online learning is relatively new, and has had much more use at the post-secondary level than at the secondary level. Some research has focused on the participation of the faculty members in distance education initiatives. As identified in the professional development literature and educational change literature, faculty play a critical role in implementing new programs.

By examining the current literature in the areas of distance education, staff development, and educational change literature, the researcher has attempted to provide a background that provides a foundation to inform and guide the construction of this study. The contextualized study will attempt to provide additional information to the growing base of literature that is associated with distance education in the form of online learning. In addition, the study will incorporate past learnings from research conducted at a post-secondary level and work to confirm similar or different findings as the study of barriers and incentives associated with faculty participation in secondary online learning programs is conducted.