CLASSROOMS WITHOUT BORDERS: THE CHARACTERISTICS OF INTERNATIONAL SECONDARY SCHOOLS THAT OFFER ONLINE COURSES

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Abstract

The purpose of this study is to examine the characteristics of international schools that offer online courses. Secondary school principals of international schools were surveyed using a newly constructed survey instrument. Eighty three secondary school principals responded to the survey for a response rate of 61%. The principals that responded were from a random sample of international schools as well as a purposeful sample of international schools that offer online courses through the Virtual High School.

The results showed that 16 of the schools, from the random sample of 60 international schools, were offering online courses. These courses were largely being offered by external course providers that are accredited and based in the United States. The main reason these schools gave for offering online courses were to offer course not otherwise available at their school and the most common type of courses they offered were elective courses.

Finding from this study also showed that there was a relationship between institutional factors of international school and whether they offered online course. The strongest associations were the size of the school, interest coming from the school community, knowledge of the online course options available, and the ease of recruiting highly qualified teachers.

One conclusion that could be drawn from this research is that the number of international schools that offer online courses is quite low when compared to schools in the United States. There could be many reasons for this, one of which is that many of the administrators at these international schools are not fully aware of the online course options that are available to them. It is hoped that this dissertation might better inform the

leadership of these schools about the advantages of offering online courses and how these courses might benefit their students.

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CHAPTER 1

Introduction

Study Rationale

There has been an explosive growth in distance education and the offerings of online courses in K-12 schools in recent years. According to the U.S. Department of Education report, *Distance Education Courses for Public Elementary and Secondary School Students: 2002–03*, an estimated 38% of all public high schools offered online courses during the 2002–03 school year (Setzer & Lewis, 2005). A large number of students took advantage of these offerings, as there were approximately 328,000 enrollments in online courses (Setzer & Lewis, 2005). This growth of online courses is even more apparent when compared to the more recent results from a survey conducted by the Sloan Consortium during the 2007-2008 school year. This survey found that 75% of the 366 school districts that responded had at least one student who had taken an online course and estimated that over 1,000,000 K–12 students participated in online learning during the 2007-2008 school year (Anthony G. Picciano & Seaman, 2009).

Why has the use of online courses gained such momentum in high schools? A major reason is that schools now have access to the internet. In 2004, ninety-two percent of public classrooms were connected to the Web, compared with only three percent just ten years earlier (Cavanagh, 2004). As the schools have become more and more connected, the number and types of online options have also increased. And with this increase, we find that the teachers are more prepared to teach online courses and the technology to deliver them has also improved (Pascopella, 2003).

School districts are looking to online courses for a number of different reasons. Those reasons most frequently cited are: offering courses not otherwise available at the school; meeting the needs of specific groups of students; and offering Advanced Placement or college-level courses (Setzer & Lewis, 2005). Online courses seems to be especially well suited for rural schools who traditionally could not offer a large selections of courses. During the 2002–03 school year, 46% of rural schools had students enrolled in online courses compared with 28% for suburban and 23% for urban schools (Setzer & Lewis, 2005).

Besides individual schools and districts getting behind the use of online courses, the U.S. Department of Education has also given online education its support in its National Education Technology Plan 2004 (U.S. Department of Education: Office of Educational Technology, 2004). The plan includes *Seven Major Action Steps and Recommendation*s, one of which is to support e-learning and virtual schools (pp. 39-44). This step includes the recommendation for states, districts and schools to provide every student access to e-learning. In the final conclusion, the authors of this plan go on to state that "some of the most promising new educational approaches are being developed outside the traditional educational system, through e-learning and virtual schools" (p. 45).

It seems clear that the use of online courses has increased dramatically in the U.S. for a variety of reasons, but what about their use in international schools around the world? There seems to be very little information available. International schools often find themselves with good access to the internet, they share a lot in common with the characteristics of a rural school, and they often take pride in being up on any new and

promising educational approaches. At the same time however, international schools also have a profile which makes them unique.

What exactly is an international school? The International Educator defines them as follows:

> 'International school' is a broad term generally used to identify schools that provide an English-medium education for children ages 3-18 in cities around the world. Many of these schools were originally started to serve the ex-patriot community; today many also serve host-country children.
>
> Each school is independent, with its own mission, vision, governance, policies and procedures. Some are more 'national' in orientation (e.g. British, or USA); others are more eclectic in their curriculum and practices. Most place a high value on the notion of promoting the skills and attitudes of global citizenship. (The International Educator, 2008)

Many international schools are relatively small in size and as a result they are limited in the number of different courses they can offer. As an example, 10 of the 18 internationals schools in Japan have high schools with less than 80 students (International Schools Services, 2008). Also the student population at many of these international schools tends to be very diverse, with the students having special needs and interests for varied course offerings. The American Embassy School in New Delhi, India, illustrates this type of diversity with students from over 50 different countries, and having its recent graduates attending universities in 19 different countries (American Embassy School, 2008a, , 2008b). Like the American Embassy School, many other international schools may find themselves pulled between offering Advanced Placements (AP) courses or International Baccalaureate (IB) courses. The student's preference might depend on where they plan to attend university or the type of school they are transferring from. With a choice of 35 different AP courses being possible, and an even more extensive list of IB courses, it becomes clear that even your larger schools can't come close to doing it all. This

situation is further exacerbated for an international school that tries to balance rigorous academic offerings with remedial classes and a rich electives program.

One way for international schools to address the needs and interest of a diverse student population is by allowing their students to take online courses at established online high schools such as the Virtual High School. In this way, schools can quickly and economically add to their current course offerings (Cavalluzzo, 2004; Zucker & Kozma, 2003).

Another benefit of using online courses is that the content can be tailored to the individual student (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Hughes, McLeod, Brown, Maeda, & Choi, 2005; Lowes, 2005; U.S. Department of Education, 2007a; Zucker & Kozma, 2003). When using an online course, additional lessons can be supplemented as needed to ensure that a student has gained understanding before moving on. Or a student who has previously covered some of the material could move along at a faster pace. This could be especially attractive for the large number of international student who move between overseas schools, where the courses from one school don't necessarily align with the next.

There are also other reasons why an international school might choose to offer online courses. For some students, online courses have actually been shown to enhanced communication (Barker & Wendel, 2001; Hughes, McLeod, Brown, Maeda, & Choi, 2005; Kozma, 1991; Zucker, 2005). A student where English is not their first language might be reluctant to speak up in a traditional classroom but "open up" in an online forum. Other reasons might include the increased access to people and resources that an online course would allow (Zucker & Kozma, 2003) or the opportunity it provides for

students to work on their time management skills (Barker & Wendel, 2001; Nitkin, 2005; Schollie, 2001). These and other benefits will be discussed in more detail in Chapter 2.

There are some highly compelling reasons as to why a school might consider offering online courses and this study investigates the extent that this is actually happening at international schools. For those schools that do offer online courses, the types of online programs that are being used and the reasons these schools have for offering online courses are examined. This study also explores the institutional factors associated with these schools to see if there are any commonalities. Together, these findings form a clearer picture of the use of online courses at international schools.

Statement of Study Purpose

The purpose of this study is to identify the factors associated with international secondary schools that offer online courses.

Research Questions

1. In what ways are international secondary schools providing online courses?
2. What types of online courses are being offered at international secondary schools?
3. What reasons do international secondary school principals give for their schools involvement in offering online courses?
4. What institutional factors of international secondary schools influence the extent to which they offer online courses? The factors being investigated are the following:

    - principal's perception of
        - the difficulty in recruiting qualified teachers
        - their own comfort level with using technology
        - where the key interest in offering online courses comes from (school board, administration, teachers, parents, students)
        - how reliable the internet access is

    - how dependable the technology support is
    - knowledge of different online course options
    - the use of technology in the face-to-face classroom
    - the faculty experience with taking online courses
- geographical location
- size of the secondary school
- expenditure per student
- percentage of budget spent on technology
- percentage of teacher turnover each year
- percentage of student turnover each year
- ratio of students to teachers
- ratio of the student to the number of courses offered in secondary school
- nationality of principal
- gender of the principal
- age of the principal
- number of years as a principal
- nationality of teachers
- nationality of students

CHAPTER 2

Review of the Literature

Overview

Within the field of education the use of online courses is relatively new so it is important to develop an understanding of the discussions and research that surround it. Online courses come under the umbrella of distance education and come in different shapes and sizes which lead to different learning experiences. These differences will be examined along with the advantages and disadvantages they have when compared with each other and also with face-to-face courses. This literature review will then conclude with an examination of the effectiveness of online courses.

With the recent and expected continued growth of online courses, leaders are looking for a strong research foundation to help them make important educational decisions (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004). Despite a considerable amount being written, much of this information about online courses tends to be based on observation and opinion, rather than on strong scientific research. It seems that research is reflecting the practice rather than driving it (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Lowes, 2005; McIsaac & Gunawardena, 1996; Sener, 2005; Smith, Clark, & Blomeyer, 2005).

There is a call for more high quality research (Watson, Winograd, & Kalmon, 2005), especially at the high school level (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Ungerleider & Burns, 2003). The research that has been conducted regarding online courses tends to be of low quality, particularly in terms of internal validity (Bernard et al., 2004). According to the Web-Based Education Commission to

the President and the Congress of the United States, "educational research suffers from three major problems- not enough money is spent on educational research, educational research often does not support enhanced learning performance, and educational research often is not accessible to teachers or easily translated into practice" (2001, p. 56). The Web-Based Education Commission asks for the development of a totally new research framework, one that reflects a deeper understanding of how people learn in the internet age, instead of being based on the perception of how people have learned in the past (Web-Based Education Commission to the President and the Congress of the United States, 2001, p. iv).

Different Types of Virtual High Schools

Just as there is variation among traditional high schools, virtual high schools also vary greatly. The literature identifies five main types as being the most common, all of which have their benefits and weaknesses. In practice, many virtual high schools are variations or combinations of these types.

State Established Schools

As of July, 2005, 21 states operated their own virtual schools (Watson, Winograd, & Kalmon, 2005). These statewide programs mainly operate at the high school level and offer courses intended to supplement traditional programs (Smith, Clark, & Blomeyer, 2005; Watson, Winograd, & Kalmon, 2005). Of those districts with students enrolled in online courses in 2002–2003, 22% had students enrolled in courses delivered by a state-level virtual school (Setzer & Lewis, 2005). A state run program which can offer online courses across different districts can also help to eliminate inequities (Cavalluzzo, 2004).

One of the largest state virtual schools is the Florida Virtual School which served over 31,000 students in the 2005-2006 school year (Florida Virtual High School, 2006).

Online Consortiums

Online consortiums are schools that come together to offer a shared curriculum. By pooling together they share the cost of developing and implementing an online program (Cavalluzzo, 2004; Vail, 2002). There are two basic models that exist: one where schools can trade courses that they develop and another where they trade course seats. The second model seems to be more efficient in terms of cost per course seat by minimizing the number of empty seats (Cavalluzzo, 2004). One of the best known online consortiums is the Virtual High School. In 2006-07 it offered 237 courses, had an enrollment of 7573 students, with 394 member schools including 25 international schools (Virtual High School, 2006).

Local School Districts

Some school districts have chosen to develop their own online courses and as of 2004 at least 36 districts are operating virtual schools (Hassel & Terrell, 2004). The advantage of this approach is that districts have complete control over their curriculum and how it is implemented. The disadvantage is the investment of resources needed in setting up, managing, and evaluating the program (Cavalluzzo, 2004). Of those districts with students enrolled in online courses in 2002–03, about 16% had students enrolled in courses delivered by their district (Setzer & Lewis, 2005). Many school districts, like the Evergreen Internet Academy in Vancouver, Washington, first established their own online learning programs for students in their district and then later expanded to include students from other districts and even other states (Hassel & Terrell, 2004).

Virtual Charter Schools

These schools, known as virtual or cyber charter schools, are a curious combination of home schools, for profit companies, and public school districts that cater to parents seeking choice (Cook, 2002). These schools go beyond the traditional charter schools, however, because of there ability to reach beyond a district and across the state (Cook, 2002). These schools may be authorized by districts, states, universities, or not-for-profit institutions (Cavalluzzo, 2004; Hassel & Terrell, 2004). Sixteen states had at least one cyber charter school operating in 2004-2005 (U.S. Department of Education, 2007b) with Arizona, Ohio, and Pennsylvania leading the way (Hassel & Terrell, 2004). As of 2004, this model of online learning was the most prolific with more than 90 cyber charter schools in operation (Hassel & Terrell, 2004). Because they are not tied to the same regulations as other schools they have more freedom with which to set up innovative programs (Cavalluzzo, 2004), but at the same time this has also brought up concerns because this also means freedom from standards and accountability (Cook 2002).

For Profit Schools

For profit schools are companies which offer their services for a fee. Currently the most popular companies are Apex, Jones Knowledge, Class.com, K-12.com, and Sylvan Learning Centers (Vail, 2002). Of those districts with students enrolled in online courses in 2002–03, 18% had students enrolled in courses delivered by independent vendors (Setzer & Lewis, 2005).

Different Types of Online Communication and Learning Environments

The methods of online communications fall into the two main categories of synchronous and asynchronous communication. Synchronous refers to communication that takes place at the same time, while asynchronous refers to communication that takes place at different times. These two types of communication impact student learning by effecting the interactions that take place. Moore (1989) classifies these interactions as learner-teacher, learner-content, learner-learner.

Synchronous Communication

Examples of synchronous communications include video conferencing, audio conferencing, telephone and live chats which require students and teachers to be "logged in" at the same time so they can participate with each other. Synchronous learning environments more closely resembles the face-to-face classroom by allowing better direct teacher-student interaction (Vail, 2002). It also allows students to get to know their classmates better which allows for a better sense of a community and provides a clear advantage over asynchronous media in facilitating the work of small groups (Zucker & Kozma, 2003). These programs also allow for more teacher control (Vail, 2002). For these reasons, online education programs that use synchronous communications are better suited for students who are not self motivated (Vail, 2002).

A disadvantage of using synchronous learning environments is that it is more expensive to implement in relation to other forms of online education because it requires a lower student-teacher ratio due to the more personalize interactions that takes place (Tinker, 2001). Or sometimes the opposite may actually occur, and in an attempt to keep cost low, it may lose the personal touch and take on the feel of an online lecture

(Haavind, Rose, Galvis, & Tinker, 2002; Tinker, 2001). Another major shortcoming of this type of communication is the loss of flexibility it allows in meeting the needs of students with are seeking online courses as a way to help resolve problems with scheduling (Haavind, Rose, Galvis, & Tinker, 2002; Vail, 2002).

Asynchronous Communication

Asynchronous communication allows for communication to take place at different times. It could include e-mail, voice-mail, threaded discussions, and discussion boards. Asynchronous learning environments have been further divided because of their unique learning environments into "different-paced" and "same-paced" (Lowes, 2005; Ngwenya, Annand, & Wang, 2004).

Different-paced courses most closely resemble the traditional correspondence courses where students have access to the material and are free to go through it at their own pace. This individualized model is more suited to learners who do not fit the classic mold or those learners who have other responsibilities and require flexible alternatives (Anderson & Elloumni, 2004). It is also very inexpensive which makes it more accessible to a larger number of students (Tinker, 2001). This model however, because the students are moving at different paces, does not allow for the types of interactions that would encourage deeper learning to take place (Haavind, Rose, Galvis, & Tinker, 2002; Hoadley & Pea, 2002; McRobbie & Tobin, 1997).

Same-paced asynchronous courses are ones where students typically follow a weekly syllabus, work on group or team projects together, and interact with each other through the discussion forums (Lowes, 2005). These courses vary from the different-paced courses because they easily allow for student interaction. Some even consider the

level of student interaction of this online model to be superior to the typical classroom because the online discussions can be more inclusive by requiring everyone to participate (Haavind, Rose, Galvis, & Tinker, 2002; Hsi & Hoadley, 1997; Zucker & Kozma, 2003). There are those who also believe that the asynchronous nature is better because it allows students more time to think and reflect which allows them to make more thoughtful contributions to discussions (Anderson & Elloumni, 2004; Haavind, Rose, Galvis, & Tinker, 2002; Hsi & Hoadley, 1997; Zucker & Kozma, 2003).

There is some concern that using asynchronous communication limits the forming of meaningful learning communities, but it has been argued that through e-mails, threaded discussions, and group projects, that asynchronous communication can still foster a sense of community (Vail, 2002). The difficulty lies in designing on online course that encourages participation which leads to collaborative learning (Haavind, Rose, Galvis, & Tinker, 2002; Mercedes Fisher, 2001) and also having a skilled teacher who intervenes only occasionally to provide strategic guidance to the direction and tone of the conversation (Haavind, Rose, Galvis, & Tinker, 2002; Tinker, 2001)

Blended Communication

The online learning environment doesn't have to use only synchronous or only asynchronous communications, but could actually be a blend of the two. Students and teachers could communicate using e-mail and discussion threads as well as by using instant messaging and online conferencing (Mercedes Fisher, 2001). The advantage of using a blend of different types of communications is that different models would appeal to different learners. Some schools have even mixed online courses with face-to-face meetings (Mercedes Fisher, 2001; Vail, 2002).

Advantages of Online Courses

Enhanced Communication among Students and Between Students and Teachers

Contrary to what many people may think, there are claims that online courses actually allows for more positive interactions to take place between the students and between the teachers and the students. Barker and Wendel (2001) found an increase in student-teacher communication as a positive benefit from taking online courses and Zucker and Kozma (2003) found that the asynchronous learning environment had a positive effect on the level of student participation and increased their cognitive process for engaging with its content.

Hughes, McLeod, Brown, Maeda, and Choi (2005) found that the online format was particularly beneficial in increasing participation among students who would be reluctant to participate in a traditional classroom and allowing them to develop a closer relationship with their teachers. Another benefit according to Zucker (2005) is that the interactions that take place are more equitable than in a face-to-face classroom where some outgoing students might tend to dominate the discussions. Hassel and Terrell (2004) found that the different ways to communicate (discussion boards, instant messaging, emails, online presentations, etc.) may increase the level of communication between class members and teachers and that the anonymous nature of online courses could empower otherwise reluctant students to share their ideas and ask questions.

The asynchronous nature of online courses also allows the students more time to think about a topic and to make more thoughtful responses (Hassel & Terrell, 2004; Hughes, McLeod, Brown, Maeda, & Choi, 2005; Lowes, 2005; Tinker, 2001; Zucker & Kozma, 2003). This built-in capability of many online courses which encourages students

to think at a deeper level is considered to be a significant advantage over traditional face-to-face courses.

More Individualize Learning

A major strength of online courses is their ability to provide an education that is personalized and individualized (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; Hughes, McLeod, Brown, Maeda, & Choi, 2005; Lowes, 2005; U.S. Department of Education, 2007a; Zucker & Kozma, 2003). These are also the characteristics that were highly recommended by the National Governors Association at its 2005 conference which highlighted the American High Schools initiative (Smith, Clark, & Blomeyer, 2005). One way in which this personalization is done is by providing students with immediate feedback from their teacher which highlights their strengths and weaknesses and allows the course to be changed as appropriate (Hassel & Terrell, 2004; National Association of State Boards of Education, 2001). Besides feedback from their instructor there may also be immediate feedback as they develop conceptual understanding from using online tools such as virtual manipulatives and computer applications (C. Cavanaugh, Bosnick, Hess, Scott, & Gillan, 2005).

Another way in which instruction is individualized is by creating an environment which adapts to the students (U.S. Department of Education, 2007a; U.S. Department of Education: Office of Educational Technology, 2004) and allows the teacher to present the materials in different ways which could vary from online notes and slides for the visual learner to teleconferencing for the auditory learner (Hassel & Terrell, 2004). The content can also be tailored to allow struggling students extra practice and varying activities to better help them learn the concepts while at the same time allowing accelerated students

the chance to skip over what they might perceive as unnecessary tasks (Greenway & Vanourek, 2006; Hughes, McLeod, Brown, Maeda, & Choi, 2005).

The asynchronous environment also allows teachers to spend more time interacting with individual students rather then with the entire class (Zucker & Kozma, 2003). Besides the extra one-on-one attention with the teacher the students may also benefit from working more extensively in smaller groups than typically found in the traditional classroom (Hassel & Terrell, 2004). Students with attention deficit disorder and anxious students can also benefit from having the additional time to attend to and reflect on the subject matter before responding (Hassel & Terrell, 2004).

Innovative Approaches that go beyond the Traditional Classroom

The Web-Based Education Commission to the President and the Congress of the United States (2001) suggests that teaching, for the most part, has remained unchanged over the years. Their report states that contrary to the research, the learning environments in schools often: 1) Focus on the short term recall of facts, rather than opportunities for deeper building of knowledge; 2) Organize around the top-down, teacher and textbook centered instruction, rather than the needs of the individual learner; 3) Limit social interaction to occasional times with peers in the classroom and encouraging solo study, rather than collaboration; and 4) Allow current assessment to influence instruction in ways that may not match the goals of 21st Century learning (pp. 58-59). The Web-Based Education Commission looks to the use of online courses to play a major part in helping to bring about a new model of education facilitated by educational technology. The U.S. Department of Education in its National Education Technology Plan (2004) supports this idea by concluding that "some of the most promising new educational approaches are

being developed outside the traditional educational system, through e-learning and virtual schools" (p. 45).

Some of these new approaches have already been stated above which include the use of more individualized instruction and the use of simulations that provide immediate feedback. Online courses can also incorporate other pedagogical changes such as an emphasis on student-centered teaching, collaboration, problem-based learning, small-group work, and authentic performance-based assessments (Hughes, McLeod, Brown, Maeda, & Choi, 2005; Lowes, 2005; Zucker & Kozma, 2003). In addition, the nature of online courses lends itself to using more open-ended questions and less lecturing (Hughes, McLeod, Brown, Maeda, & Choi, 2005). According to the National Association of State Boards of Education, "e-Learning can help students visualize and comprehend difficult-to-understand concepts through such methods as simulations and opportunities to engage in real-world problem solving" (2001, p. 10).

Louis Fox, vice provost and information professor at the University of Washington, gives an example of the rich learning experience that is possible with online courses. He refers to the Lewis and Clark Bicentennial, which involves museums, libraries, and community groups across the nation and includes a reenactment of the journey, student access to relevant resources, and the ability to go along on the voyage virtually and talk with some of the participants and experts at each of the stops (Rivero, 2005).

Better Suited for Today's Media Intense Students

Online courses may be better suited for the students of today who are more tech-savvy and make more extensive use of the media. Fisher (2001) states that the "Net

Generation" student expects more active ways of seeking out and using knowledge then is found in the typical classroom. In an age in which the amount of published information on the internet doubles every 54 days, teachers can no longer be experts that simply deliver information to students (Pape, 2005).

Students born between 1982 and 2000 spend more time surfing the Web, building websites, communicating through instant messaging, and writing blogs than they do watching television (Pape, 2005). Zucker and Kozma (2003) found that online courses use teaching strategies that build on the learning styles of kids growing up in a media-intensive world. The National Education Technology Plan (U.S. Department of Education: Office of Educational Technology, 2004) also agrees that online courses might be better suited for the tech-savvy teenagers of today and that these students will be the drivers of a reform that creates a new student-teacher partnership (U.S. Department of Education: Office of Educational Technology, 2004).

Increased Access to People and Resources

Another advantage of online courses, which can be especially appealing to schools in more remote areas, is that they increase the variety of resources that are available to the student. Zucker and Kozma (2003) mention an increased access to documents, libraries, museums and other online resources. Online courses also allow communication with people that the students would not normally have access to. These people could include experts such as politicians, scientists, and businesspeople (Zucker & Kozma, 2003). By using the technology to help expand the student's background it allows for more authentic and meaningful learning to take place (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004; National Association of State Boards of

Education, 2001). Besides increasing the access to experts, online courses also allow students to interact with students and teachers in other parts of the country, and even the world, and gain the benefit of different views and perspectives (Zucker & Kozma, 2003).

Students Hone Ability to Manage Time and Work Independently

An indirect benefit of students taking online classes is that it can improve on the their ability to manage time more effectively and work independently (Nitkin, 2005). Schollie, as part of the Alberta Online Consortium research study (2001), found that 95% of students, 97% of parents, and 99% of teachers felt that students were improving in the ability to learn on their own, and over 75% percent of students, 90% of parents, and 90% of teachers felt that students ability to manage time was also improving. Barker and Wendel in their study of nine senior secondary schools in Ontario, Alberta and British Columbia (Barker & Wendel, 2001) found that students, parents and teachers in virtual schools rated the category "improved in learning independently" and "improved time management" higher or much higher then their conventional schools counterparts.

Students Are Better Prepared for Changing World of Tomorrow

It has been recognized that the rapid changes in technology would invite the coming of the information age which would in turn lead to changes in the workforce (Information Infrastructure Task Force, 1993; U.S. Department of Education, 1996). The *Report to the President on the Use of Technology to Strengthen K-12 Education in the United States* identified these changes as moving from a society where the workers have "specific skills or knowledge" to one where the workers are able to "readily acquire new knowledge, to solve new problems, and to employ creativity and critical thinking in the design of new approaches to existing problems" (President's Committee of Advisors on

Science and Technology, 1997). A U.S. Department of Education article, *Visions 2020: Transforming Education and Training through Advanced Technologies*, even goes so far as to suggest that America's future will clearly depend on how well we acquire these skills and stay competitive in this rapidly changing world (2002). This warning is also echoed by the New Commission on the Skills of the American Workforce in its report *Tough Choices or Tough Times* (2006).

These changes that are being demanded in the workplace are subsequently putting increased expectations on our education system (Roschelle, Pea, Hoadley, Gordin, & Means, 2000; U.S. Department of Education, 2007a). Many share the view, however, that our education system is relatively static, and therefore cannot adapt at a similar pace to adequately prepare our next generation of workers (New Commission on the Skills of the American Workforce, 2006). According to Zucker and Kozma (2003) the use of online courses will play a key roll in helping our schools meet the increased expectation of preparing our students for the "knowledge-based workplaces". The U.S. Department of Education report *Connecting Students to Advanced Courses Online* agrees that the students in online courses have the opportunity to "become comfortable with the kinds of information technology that are fast becoming an integral element of so many living wage jobs" (2007a). This idea is also supported in the results found in the Schollie's survey (2001) where 89% of students, 90% of parents and 94% of teachers agree that the online school is teaching students the knowledge, skills, and attitudes to live in a changing society.

Access of More and Better Courses to More Students

The National Center for Education Statistics found that 26% of U.S. high schools did not offer any advanced courses in English, math, science, or foreign languages in 2000, and that only 58% offered two or more advanced courses (U.S. Department of Education, National Center for Education Statistics, 2005). Even in those schools that did offer the option of advanced courses, access to students has been limited in many cases because these courses often have only one section and create scheduling conflicts (U.S. Department of Education, 2007a).

Another issue facing schools is the unequal distribution of effective teachers. Jacob (2007) describes the staffing difficulties encountered by urban schools which have resulted in hiring teachers who are less highly qualified than their suburban counterparts with respect to criteria such as experience, educational background, and teaching certification. Murnane and Steele (2007) state that this is perhaps the most urgent problem facing American education: "Poor children and children of color are disproportionately assigned to teachers who have the least preparation and the weakest academic backgrounds, and this pattern is long-standing" (p. 36).

Many schools are looking to online courses as a way to provide more and better courses for their students (Cavalluzzo, 2004; Setzer & Lewis, 2005; U.S. Department of Education: Office of Educational Technology, 2004). According to Lowe, the most likely reason schools would choose to offer online courses is to make a more diverse and challenging curriculum available to their students (Lowes, 2005). In a survey conducted by the Sloan Consortium of 366 school districts nationwide, approximately 68% rated using online learning to offer AP or college-level courses as "important" (A. G. Picciano & Seaman, 2007, pp. 7-9). Besides allowing schools to offer more choices, online courses

have also been seen as a way to allow parents an alternative choice of who provides their children's education (U.S. Department of Education: Office of Educational Technology, 2004). In other words, online courses can be seen as a way to help level the playing field by providing more equitable access to the best teachers and courses (Barker & Wendel, 2001).

Another way in which online courses can help provide better access is to help relieve the pressures oftentimes faced with scheduling issues. In the Sloan Consortium survey mentioned above, is was found that approximately 55% rated reducing scheduling conflicts for students as "important" (A. G. Picciano & Seaman, 2007, pp. 7-9). Others also agree that the flexibility that online courses provide is a major advantage (Hughes, McLeod, Brown, Maeda, & Choi, 2005; Schollie, 2001).

Lower Cost

Another benefit of offering online courses that is often overlooked is that they can deliver instructional offerings at lower costs and with reduced administrative overhead when compared with traditional courses (Zucker & Kozma, 2003). While it is true that the time and expertise that it would take for a school to develop its own online course would make it very costly (Bender, 2005; Engelbrecht & Harding, 2005; Williams, 2002), the alternative of buying course seats from external providers makes it very economical, especially if the school already is equipped with computers and has internet access (Cavalluzzo, 2004). The savings could be even more substantial for international schools where, according to Greenlees, the cost of attracting and retaining teachers is even more considerable (2006).

Disadvantages of Online Courses

Poor Quality Programs

The demand for online courses has caused a large number of providers to emerge in a relatively short period of time. College Board (n.d.) warns that this rapid growth has resulted in the formation of many weak programs that fail to provide a valid educational experience. One of the main reasons that many of these courses fall short, according to Blomeyer (2006), is that the teachers lack the theoretical and practical understanding of teaching online.

Not Suited for all Students

Online courses are not always a good fit for all students. One of the biggest challenges students face is adapting to the self-directed nature of the online environment (DeTure, 2004; Engelbrecht & Harding, 2005). Those students who have a hard time with self-discipline and internal motivation will often have a difficult time being successful because online courses lack the structure of a traditional face-to-face classroom (DeTure, 2004; Donlevy, 2003; Ungerleider & Burns, 2003; Williams, 2002; Zucker & Kozma, 2003). Younger students in particular may find online courses more difficult because they may have "a lower degree of the autonomy needed to learn independently and less internal locus of control and intrinsic motivation to persist in their studies" (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004, p. 13). Vonderwell (2003) agrees that students are often not prepared for the level of interdependence that is required for an online course and that these skills and strategies need to be learned.

Another challenge many students face when taking online courses is the heavy focus on writing. If writing is a weakness for students they might struggle with the

requirements of on online course (College Board, n.d.). In particular, students with language difficulties may find the online environment highly frustrating (Schollie, 2001). Some students are also intimidated and reluctant to put their thoughts into writing where they become "permanent" and can be criticized by others (Williams, 2002).

Feeling of Isolation and Lack of Community

A downside of taking online courses can be the lack of face-to-face interactions which can sometimes lead to feelings of isolation (Greenway & Vanourek, 2006; McKimm, Jollie, & Cantillon, 2003; Ungerleider & Burns, 2003; Vonderwell, 2003; Zucker & Kozma, 2003). Parents also may have concerns that the missing social interactions might effect their child's social development (Cathy Cavanaugh, Gillan, Kromrey, Hess, & Blomeyer, 2004). Besides the lack of community, some students also report a lack of connection with their teachers (Song, Singleton, Hill, & Koh, 2004). Donlevy (2003) explains how important the social and emotional aspects of teaching are in the learning process and how "the absence of personal contact may block some dimensions of learning that are important to any educational experience."

Delay in Feedback

Another disadvantage with online courses that has been reported by some is the delay in getting feedback from the teacher and other students in the course (Engelbrecht & Harding, 2005; Song, Singleton, Hill, & Koh, 2004; Ungerleider & Burns, 2003; Vonderwell, 2003). This is especially apparent in asynchronous communication where participants may not be checking in often enough and students can become frustrated waiting for a discussion to mature (Engelbrecht & Harding, 2005). Synchronous communications avoids this problem but it can often be difficult to find a common

meeting time and moderation of large group conversations online is difficult (Engelbrecht & Harding, 2005).

Security of Assessments

Online courses can also present challenges when it comes to assessments because of issues with security and authenticating a student's work (McKimm, Jollie, & Cantillon, 2003; Olt, 2002; Rovai, 2000; Rowe, 2004). Instead of passing notes and writing on desks as in a traditional classroom, students in online courses can send emails and have an open book in front of them (Olt, 2002; Rowe, 2004). For an online course, the issue of test security and academic honesty is about the same as for a take home test, which means these scores are not sufficiently reliable (Rovai, 2000). A study done by Kennedy, Nowak, Raghuraman, Thomas and Davis (2000) found that it was the general view of both students and teachers that it would be easier to cheat in an online course than in a tradition face-to-face course. This is supported by the statement from Rowe (2004) that "students often have less commitment to the integrity of distance-learning programs than traditional programs because distance-learning programs often lack tradition." This situation may even be made worse by the ignorance of teachers to the different methods that students could be using to cheat online (Rowe, 2004). There is a study, however, by Grijalva (2006) which contradicts these views, where it was found that the incidences of cheating in online classes was comparable to those in traditional classes.

Issues Involving Technology

In order for a student to be successful in an online course they must first overcome any issues involving technology. The first hurdle, of course, is that it is

necessary for all students to have access to a reliable computer with an internet connection (McKimm, Jollie, & Cantillon, 2003). Students can quickly become frustrated if their equipment doesn't work properly or it is too slow (Kleinman & Entin, 2002; McKimm, Jollie, & Cantillon, 2003). Some students can also become discouraged when trying to learn and use the necessary software, such as how to access and send files and how to participate in electronic discussions (Kleinman & Entin, 2002; Williams, 2002). Technical support, therefore, becomes a critical element in the success of an online class (Donlevy, 2003). Carswell, Thomas, Petre, Price and Richards (2000) however, found in their study that "students are surprisingly tolerant of technical problems- as long as they were resolved."

Effectiveness of Online Courses

There are numerous studies which attempt to compare the effectiveness of online courses with that of face-to-face education. What follows are five key studies which have analyzed and summarized the results from many of these individual studies.

In a study by Shachar and Neumann (2003) they performed a meta-analysis of online education versus conventional education that included 86 studies and over 15,000 participating students. The studies chosen were performed between 1990 and 2002 and included a control or comparison group. The conclusion of this meta-analysis was a moderate positive effect size for online education when using final academic performance as the outcome variable.

Another study regarding on-line learning was conducted by the Council of Ministers of Education, Canada and Industry Canada and included an in-depth review of the literature which included 25 studies from 7 countries between 2000-2003, as well as a

meta-analysis of an additional 8 studies (Ungerleider & Burns, 2003). Only a small number of these studies pointed toward a preference one way or the other, and the report clearly indicated concerns over the methodology used in these studies. As a result, the report concluded with a mixed view and did not draw any definite conclusions regarding the effectiveness of online courses.

In a third study by Cavanaugh, et al. (2004) they conducted a meta-analysis that included 14 studies done with K-12 schools between 1999 and 2004. The factors examined included academic content area, grade level of the students, role of the distance learning program, role of the instructor, length of the program, type of school, frequency of the distance learning experience, pacing of instruction, timing of instruction, instructor preparation and experience in distance education, and the setting of the students. Although there was some variation in the results and the degree of student success, overall none of the factors that were examined were found to be related to significant positive or negative effects. From these results it was concluded that "as distance education is currently practiced, educators and other stakeholders can reasonably expect learning in a well-designed distance education environment to be equivalent to learning in a well-designed classroom environment" (p. 20).

A fourth study which was conducted by Bernard et al. (2004) contained the results from a meta-analysis of the online education literature from 1985 to 2002 which included 232 studies. He concentrated on achievement, attitude and retention, and found that in some cases online education outperformed their classroom counterparts and in others cases it underperformed. Bernard concluded that the attention to the quality of the course design was a more important factor then the attention to the characteristics of media, and

that overall, classroom instruction and online education are comparable. Bernard also stated that definite conclusions could not be made because of the low quality of the research, especially with regards to internal validity.

In a fifth study, North Central Regional Educational Laboratory (NCREL) sponsored eight new quantitative research studies from 2001-2004 to better understand the efficacy of online learning in K-12 education (Smith, Clark, & Blomeyer, 2005). The studies that NCREL sponsored were chosen based on their rigorous research methodologies. In the conclusion from this research it is indicated that on average, students seem to perform equally or better academically in online learning. In the conclusion it also stated that due to the small number of studies used, there could not be real confidence in these conclusions until there is more support from further high-quality quantitative research.

Although individual studies have shown positive effects one way or the other, overall these effects tend to be small and in the end they balance out. The research seems to support that when taken as a whole there is no significant difference between online and traditional courses. Bailey (2002) captures this thought with the following statement:

> Finally, let me say this to those who may be skeptical about the effectiveness of e-learning: one quickly finds that those factors that are hallmarks of any truly effective traditional education program— qualified teachers, quality curriculum, and frequent student- teacher interaction—are the same factors one looks for in e-learning. In the end, e-learning is more about the learning than it is about the ‘e’.

The Web-Based Education Commission to the President and the Congress of the United States (2001) also supports this view:

> Based on a limited number of studies that take into account student outcomes (grades and test scores) and satisfaction, students in distance learning courses perform as well as their counterparts in traditional classroom settings, earn similar grades or test scores, and display the same attitudes toward the course. (p. 79)

The National Association of State Boards of Education in their report on e-learning (2001) include the following statement: "Evidence to date convincingly demonstrates that, when used appropriately, electronically delivered education—'e-learning'— can improve how students learn, can improve what students learn, and can deliver high-quality learning opportunities to all children" (p. 4).

Some in the field are not so quick to merge the results of these individual studies and disregard the differences. Zhao, Lei, Yan, Lai and Tan (2005) make the following statement: "The results show that although the aggregated data of available studies show no significant difference in outcomes between distance education and face-to-face education as previous research reviews suggest, there is remarkable difference across the studies". Cavanaugh et al. have also examined these differences and have come to the conclusion that online education is not the most effective choice in all situations, such as with subjects that require a physical demonstrations of skill, such as music, physical education, or foreign language (2004). For example, Bond (2002) found that with an online instrumental music program there were negative effects on performance quality, student engagement, and development and refinement of skills and knowledge. Conzemius and Sandrock (2003) also report that when learning another language in

elementary school that "the optimal learning situation still involves the physical presence of a teacher" (p. 47). Also, when it comes to listen and speaking skills, Barker and Wendel found that virtual school students show less improvement than those in conventional schools (2001).

It has been suggested by some that the research should no longer focus on comparing online courses to traditional courses, but instead focus on comparing online courses to other online courses. "Further examination of the difference reveals that distance education programs, just like traditional education programs, vary a great deal in their outcomes, and the outcome of distance education is associated with a number of pedagogical and technological factors" (Zhao, Lei, Yan, Lai, & Tan, 2005). Gunawardena and McIsaac suggests that we "begin to examine factors such as instructional design, learning and instructional theory, and theoretical frameworks in distance education, which when applied to learning, might account for significant differences in levels of performance" (2004, p. 378). They go on to state: "The questions that need to be asked are not which medium works best, but rather how best to incorporate media attributes into the design of effective instruction for learning. Studies which compare two different instructional designs using the same medium may yield more useful results for practice than simple media comparisons" (p. 378).

CHAPTER 3

Methodology and Methods

Introduction

This chapter describes the methodology used to identify the institutional factors influencing the extent to which international secondary schools offer online courses. The purpose of this chapter is to describe 1) the methodology; 2) the selection of the sample; 3) the description of the survey instrument; 4) the collection of the data; and 5) the data analysis. This study addresses the following specific research questions:

1. In what ways are international secondary schools providing online courses?
2. What types of online courses are being offered at international secondary schools?
3. What reasons do international secondary school principals give for their schools involvement in offering online courses?
4. What institutional factors of international secondary schools influence the extent to which they offer online courses?

Methodology

There is a lack of empirical data in previous research in this area. Thus, this is an exploratory research study taking into consideration the review of the literature. Survey methods were used to explore the institutional factors influencing the extent to which international secondary schools offer online courses. Creswell states, "A survey design provides a quantitative or numerical description of trends, attitudes, or opinions of a population by studying a sample of that population. From sample results, the researcher generalizes or makes claims about the population" (2009, p. 153).

The uses of surveys have advantages compared to other methods. First, according to Patten (2001), surveys are an efficient way to collect data. Second, they allow for the rapid turnaround in data collection (Creswell, 2009). And third, surveys yield data which are easier to tabulate and analyze (Patten, 2001). In this particular study a survey also has the advantage of being convenient because the physical locations of international schools are spread out around the world.

Survey methods are appropriate in this study because the types of questions under investigation can be answered effectively using quantitative data. Questions involving institutional factors, such as the number of students in the high school, and questions involving the extent to which international secondary schools offer online courses, such as the percentage of graduates who have taken at least one online course, are easily answered through a survey. For other types of questions, such as eliciting from the principal the reasons for their schools involvement in offering online courses, a scaled response to the survey questions was used. In addition to having the advantage that it is easy to complete, a scaled response also has the advantage that it can also be used to measure the degree of a response (Instructional Assessment Resources, 2009). An extensive review of the literature guided the questions asked in the survey. However, open-ended questions were still included so that any unanticipated responses could still be captured.

Selection of the Sample

The directors of the seven regional educational organizations (Central and Eastern European Schools Association, Association of American Schools in South America, East Asia Council of Overseas Schools, European Council of International Schools, Near East

South Asia Council of Overseas Schools, South Asia International Schools Association, and Latin American Tri-Association) were contacted by email to obtain an indication of the number of international schools that were using online courses in their region. Their replies pointed out that this information was not known and that they were unable to name specific schools in their regions that were offering online courses.

This response indicated that the number of schools offering online courses among the general international school population might be quite low. As a result, it was decided that a purposeful sample would be used. A list of 45 international schools that were currently using online courses were identified from the Virtual High School website (2008). An additional 90 international schools were also selected so a comparison group of schools not offering online courses could be identified. These 90 additional schools were randomly selected from the list of 539 international schools found in the *ISS Directory of International Schools* (International Schools Services, 2008) using the random number generator function on a TI-83 graphing calculator.

The respondents for this survey were the secondary school principals at these international schools. The names of these administrators were identified from the *ISS Directory of International Schools* (International Schools Services, 2008) by the titles Secondary School Principal, Head of Upper School or High School Principal. Some smaller schools did not have a separate administrator in this position, so the respondents in these cases were the persons identified as the Director, Superintendent or Headmaster of the school. Secondary schools typically include grades 9-12; however, in some instances, some schools define secondary schools as grades 7-12.

Description of Survey Instrument

An existing survey instrument that would help answer the research questions was not found, so one was developed by the researcher and can be found in Appendix A. The survey questions were developed based on the literature review from Chapter 2 and were divided into two main sections. The first section contained questions which were used to determine the use and types of online courses being offered at the school. The second section contained questions designed to reveal the factors affecting school administrators' decisions to offer online courses. The wording and the types of questions used drew upon the works of Patten (2001) and Creswell (2009).

The first section consisted of ten questions, the first of which was used to ascertain whether the school offered online courses or not. If the principal of the school replied that they did offer online courses at their school, then the next questions were used to establish whether the courses the school provided were internally or externally developed, who provided them, and in what subject and content areas the online courses were offered. Questions were then designed to determine the number of students taking online courses and the number of different courses they typically take. The final questions of this section use Likert scales which allowed the principals to rate the reasons why their schools offered online courses

The second section of the survey included twenty questions designed to capture the institutional factors of the school and was divided into four subsections. These subsections included the technology environment of the school, community interest in offering online courses, school demographics, and demographics of the principal. Likert scales were used to obtain the administrators' perception of items related to technology,

such as the reliability of the internet, the level of technology support, and the use of technology in the classrooms at their school. Likert scales were also used to find out the extent of the interest in offering online courses from the different groups which make up the school community (teachers, parents, students, administration, and the school board). The school demographics section included questions such as the number of high school students, nationality of students, amount of student turnover, the number of face-to-face courses offered, and the expenditure per student. The principal demographics included questions regarding gender, age, years as an administrator, nationality and comfort level with technology. A complete list of all the survey questions can be found in Appendix A. Table 1 shows the survey items and the research questions they address.

Table 1

Survey items and the research questions they address

Research Question	Survey Items
1) In what ways are international secondary schools providing online courses?	1-6
2) What types of online courses are being offered at international secondary schools?	9
3) What reasons do international secondary school principals give for their schools involvement in offering online courses?	10a-k
4) What institutional factors of international secondary schools influence the extent to which they offer online courses?	7, 8 (extent that schools offer online courses) 11a-e (technology environment) 12a-e (community interest) 13-25 (demographics of school) 26-30 (demographics of principal)

Collection of the Data

A web-based survey was used to gather the data using SurveyMonkey (www.surveymonkey.com) as the survey provider. Web based surveys have the advantage of collecting data in a relatively short amount of time and there is also an increased accuracy of the data collected (Couper, 1998; Information Technology Service, 2008; Wright, 2005). Web based surveys can also be more personalized by allowing for skip patterns and the ability to more easily track and follow up with non-respondents (Wright, 2005).

Email addresses for the secondary school principals were found on their school websites or through their regional organizations. An email containing a link to the survey was sent on January 21 and 22, 2009 to the 45 principals of the schools offering online courses. A copy of this email can be found in Appendix B. Fourteen of these 45 principals took part in the survey. On January 24-26, 2009, emails were sent to the principals of the 90 randomly selected schools. A copy of this email can also be found in Appendix C. Twenty of these 90 principals responded to the survey.

Reminders were sent on February 1 and 2, 2009 to the principals who had not yet taken part in the survey. A copy of this email can be found in Appendix D. The responses increased to 18 for the purposefully selected group and 45 for the randomly selected group. A final reminder was sent on February 9, 2009 to the remaining principals, and this time the number of responses increased to 28 and 55 for the two groups. The final number of principals that responded to the survey was therefore 83 out of the 135 international schools identified, for a responses rate of 61%.

Data Analysis

The returned surveys were checked for errors and the information was entered into the Statistical Package for Social Sciences (SPSS). Analysis was then performed on this data so that the four research questions could be answered.

Research Question 1: In What Ways are International Secondary Schools Providing Online Courses?

Descriptive statistics are used to answer this question. From the random sample, the numbers and percentages of schools that offer online courses, are considering offering online courses, and are not considering offering online courses are given. For the group that offers online courses, the number and percentage of schools that used courses developed internally and the number who used courses offered by an external provider are also given. The names of external providers used by these schools are displayed along with the number of schools that use them.

Research Question 2: What Types of Online Courses are Being Offered at International Secondary Schools?

A frequency table is used to display the types of online courses being offered at these international schools. The course types are AP, IB, remedial, core academic or elective courses.

Research Question 3: What Reasons Do International Secondary School Principals Give for Their Schools Involvement in Offering Online Courses?

For the various items included in the survey under the category "reasons for offering online courses," the numbers and percentages of principals that responded "agree" or "strongly agree" are given. Also, to see the relationship between the

principal's responses and the institutional factors, a Pearson correlation coefficient was calculated for each of the institutional factors (independent variables) that have been identified and each of the reasons for offering online courses (dependent variables).

Research Question 4: What Institutional Factors of International Secondary Schools Influence the Extent to Which They Offer Online Courses?

To explore differences in schools that offer online courses to those that do not, a t-test or a chi-square test was performed for each of the identified institutional factors. A logistic regression was also performed to explore the extent that these institutional factors could predict whether schools offer online courses or not.

A Pearson correlation coefficient was calculated between each of the institutional factors (independent variables) and the percentage of students taking online courses (dependent variables). To explore how well these factors can be used to predict the extent to which a school offers online courses a multiple regression was also performed.

Summary

The purpose of this study is to identify the institutional factors influencing the extent to which international secondary schools offer online courses. To obtain these data, survey methods were used. A survey was a convenient and efficient way to gather the necessary data for analysis from which generalizations about the use of online courses at international schools could be made. Statistical test included Pearson correlations, t-tests and chi-square tests, as well as logistic and multiple regressions.

CHAPTER 4

Results

Introduction

This chapter describes the results of the research undertaken to identify the institutional factors influencing the extent to which international secondary schools offer online courses. These results are the summary and analysis of the data gathered through a web-based survey given to international secondary school principals as described in Chapter 3. As previously stated, this study is guided by the following research questions:

1. In what ways are international secondary schools providing online courses?
2. What types of online courses are being offered at international secondary schools?
3. What reasons do international secondary school principals give for their schools involvement in offering online courses?
4. What institutional factors of international secondary schools influence the extent to which they offer online courses?

Profile of International Schools used in Study

The international schools used in this study vary greatly as can be seen by the summary of their demographics as shown in Table 2 and Table 3. Table 2 is a summary of the school demographics and Table 3 is a summary of institutional characteristics of these international schools.

Table 2

Summary of international secondary schools demographics

	Number	Percentage
Total number of schools	83	100%
Region		
Asia	29	34.9%
Europe	22	26.5%
South America	14	16.9%
Africa	9	10.8%
North America	8	9.6%
Australia	1	1.2%
Largest student nationality group		
U.S.	29	35.4%
Korean	7	8.5%
Japanese	4	4.9%
Venezuelan	4	4.9%
Other	38	46.3%
Largest teacher nationality group		
U.S.	51	63.0%
Australians	5	6.2%
U.K.	5	6.2%
Other	20	24.7%
Nationality of principal		
U.S.	40	50.6%
U.K.	14	17.7%
Canadian	10	12.7%
Australian	6	7.6%
Other	9	11.4%
Gender of principal		
Male	66	85.7%
Female	11	14.3%

Table 3

Summary of institutional characteristics of international secondary schools

	Smallest value	Largest value	Mean	SD	CV
Number of high school students	1	1140	265	219	.83
Percentage of student turnover	1	80	20.9	11.4	.55
Number of teachers in the high school	3	115	36.5	23.0	.63
Percentage of teacher turnover	0	50	14.3	9.1	.62
Number of face-to-face courses	8	278	70.4	53.0	.75
Expenditure per student in US dollars	500	25,000	10,258	6791	.66
Percent of budget spent on technology	1	30	7.0	6.8	.97
Age of principal	29	65	47.7	8.1	.17
Years as principal	1	35	8.2	7.8	.95

Although the demographic data vary from school to school, some information stands out from the rest. First, the largest nationality group of students and teachers at these international schools is overwhelmingly U.S., 35.4% and 63.0% respectively, compared to the next highest nationality groups of 8.5% and 6.2%. Second, a notably larger number of secondary school principals (85.7%) are male.

It is also interesting to note just how widely the institutional characteristics of these international schools can vary. For example, there is a secondary school with only one student[1] compared to a secondary school with over 1100 students. Another example is a school with a yearly student turnover rate of 1% as compared to another school with

[1] This one high school student is part of a larger school which contains an elementary and middle school.

a student turnover rate of 80%. In this chapter these differences are examined to see how they relate to a principal's decision to offer online courses at their school. These next sections examine these results in relation to the four research questions.

Results for Research Question 1:

In What Ways are International Secondary Schools Providing Online Courses?

To generalize these results appropriately to all international schools, only those responses from principals of schools that were selected at random were used to answer this question. Of the 98 principals that were contacted, survey results were obtained from 60, for a response rate of 61.2%.

Sixteen of the secondary school principals (26.7%) that responded to the survey indicated that their schools were offering online courses. Of the 44 principals from schools that did not offer online courses, 17 of these (38.6%) said that they were considering offering online courses.

Of the 16 principals from schools that offered online courses, only one indicated that their school was using a course that had been developed internally. All 16 of the principals, however, indicated that their schools were using courses offered by an external provider. Most of these schools used only one external provider, but one school used two, and three schools used three different external providers. The list of external course providers and their frequencies are shown in Table 4. The complete list with their web address and accreditation can be found in Appendix E.

Table 4

External online course providers used by international secondary schools

External Online Course Provider	Frequency	Percentage
University of Nebraska-Lincoln Independent Study High School	7	43.8%
Virtual High School	4	25.0%
Brigham Young University Independent Study	3	18.8%
Apex Learning	2	12.5%
Sevenstar Academy	2	12.5%
Keystone National High School	1	6.3%
Mathletics	1	6.3%
Kaplan College Preparatory	1	6.3%
Northstar Academy	1	6.3%
University of Missouri High School	1	6.3%

The identification of ten different online providers selected by the 16 schools shows the diversity of available online course options. Seven schools use the University of Nebraska, however, indicating that some providers are more commonly used than others. All of the providers used in these schools offer online courses that are self-paced which allow students to progress through the courses at their own speed. With the exception of Mathletics, which is located in Australia, all these providers are located in the United States and accredited by one of the six regional accreditation agencies.

Results for Research Question 2:

What Types of Online Courses are Being Offered at International Secondary Schools?

To obtain a more complete picture as to the types of online courses being provided by international schools, a purposeful sample was included along with the random sample. The responses from the 35 principals who responded to the survey that their school offered online courses are summarized in Table 5.

Table 5

Type of courses provided online

Type of courses	Frequency	Percentage
Elective courses	25	71.4%
AP courses	21	60.0%
Core academic courses	20	57.1%
Remedial courses	12	34.3%
IB courses	6	17.1%
Other courses	1	2.9%

Elective courses, such as criminology or creative writing, were the most common type of online classes offered by these schools. The next most common types were Advanced Placement or core academic classes. Some schools also choose to offer remedial courses online, which allowed students to make up classes that they had previously failed.

Thirty of these principals (85.7%) responded that their schools offered more than one type of online course and 14 of these principals (40.0%) responded that their school offered three or more types.

Results for Research Question 3:

What Reasons Do International Secondary School Principals Give for Their Schools Involvement in Offering Online Courses?

Thirty-four principals responded to the questions regarding the reasons that their schools offered online courses. For each of the given reasons, the number of principals that responded with "agree" or "strongly agree" is summarized in Table 6.

Table 6

Reasons for secondary schools offering online courses

Reasons	Answered "agree" or "strongly agree"	
	Number	Percentage
Offer courses not otherwise available	31	91.2%
Reduce scheduling conflicts for students	21	61.8%
Increase students access to other people and resources	17	50.0%
Provide more individualized student learning	16	47.1%
Offer innovative approaches beyond the traditional classroom	15	44.1%
Help students hone ability to work independently	15	44.1%
Help students to develop better time management skills	11	32.4%
Reduce cost compared to traditional face-to-face courses	8	23.5%
Suit the needs of today's media oriented students	5	14.7%
Improve communication between students and teachers	4	11.8%
Improve communication among students	4	11.8%

From the responses it is quite clear that the most common reason for offering online courses at these international schools is "to offer courses not otherwise available" (91.2%). The next two reasons, "to reduce scheduling conflicts for students" (61.8%) and "to increases students access to other people and resources" (50.0%), were less common but were still given by more than half of the schools.

Principals also gave additional reasons for offering online courses. One principal wrote that online courses provided the school with an option in case of an event like

SARS or the Avian Flu. A second principal gave the reason: “We have students coming from numerous backgrounds and different course requirements. We need to offer more, but are hindered due to our size, so these courses help fill the gap.” A third principal suggested that by offering online courses in high school, it allows students the opportunity to be better prepared to take online courses later when they attend university. And two other principals wrote that their school wanted to provide an option for those students who failed a course and needed to fulfill a graduation requirement.

The relationship between the different institutional factors and the reasons for offering online courses were investigated using Pearson product-moment correlation coefficients. The results that show a correlation coefficient of 0.40 or higher are shown in Table 7. The complete results are included in Appendix F.

Table 7

Correlation between institutional factors and reasons for offering online courses

Institutional Factors	Correlation
Reduce scheduling conflicts for students	
Majority of teachers are U.S.	0.40*
More innovative approaches that go beyond the traditional classroom	
Interest comes from the school board	0.50**
Interest comes from the administration	0.48**
Dependable technology support	0.44*
Interest comes from the parents	0.41*
More individualized student learning	
Knowledge of the different online course options available	0.50**
Interest comes from the administration	0.47**
Interest comes from the parents	0.46**
Better suited for today's media oriented students	
Interest comes from the administration	0.50**
Dependable technology support	0.45**
Knowledge of the different online course options available	0.42**
Costs less than traditional face-to-face courses	
Expenditure per student in US dollars (n=15)	0.57*
Interest comes from the parents	0.42*
Help students hone ability to work independently	
Interest comes from the parents	0.54**
Knowledge of the different online course options available	0.44*
Dependable technology support	0.43*
Interest comes from the school board	0.40*

Continued on next page

Table 7 continued

Help students to develop better time management skills	
Interest comes from the parents	0.54**
Dependable technology support	0.45**
Interest comes from the school board	0.44**
Interest comes from the administration	0.41*
Enhance communication between students and teachers	
Dependable technology support	0.48**
Number of teachers in the high school	0.48**
Interest comes from the parents	0.45**
Number of face-to-face courses	0.44*
Technology is used in most classrooms on a regular basis	0.42*
Reliable internet access	0.41*
Enhance communication among students	
Dependable technology support	0.50**
Reliable internet access	0.46**
Technology is used in most classrooms on a regular basis	0.43*
Interest comes from the parents	0.41*
Increases students access to other people and resources	
Interest comes from the parents	0.55**
Dependable technology support	0.51**
Knowledge of the different online course options available	0.47**
Ratio of students to face-to-face courses (n=25)	-0.44*
Majority of students are U.S.	0.41*
Interest comes from the students	0.40*
Interest comes from the administration	0.40*

n = 31-34, *p < .05, **p < .01

The highest correlation which is moderate to strong is between the institutional factor "expenditure per student" and the reason "cost less than traditional face-to-face

courses" ($r = 0.57$, $n = 15$, $p < .05$). Other correlation which are moderate to strong are between "interest comes from parents" and the following three reasons: "help students hone ability to work independently" ($r = 0.54$, $n = 34$, $p < .01$), "help students to develop better time management skills" ($r = 0.54$, $n = 34$, $p < .01$), and also "increases students access to other people and resources" ($r = 0.55$, $n = 32$, $p < .01$). Other moderate and moderate to strong correlations can be found in Table 7.

Results for Research Question 4:

What Institutional Factors of International Secondary Schools Influence the Extent to Which They Offer Online Courses?

The results for this section are divided into two main parts. First, the institutional factors were examined between the two groups of schools, those that offer online courses and those that do not. This analysis was completed using independent sample t-tests, chi-square tests, and a logistic regression model. Second, the institutional factors were examined in relationship to the percentage of graduates who have taken at least one online course. This was conducted using Pearson product-moment correlation and a standard multiple regression model.

Comparison of Institutional Factors Between Schools That Offer Online Courses and Those That Do Not.

Independent-samples t-tests were conducted to compare the institutional factors for schools that offer online courses and those that do not. Table 8 shows the results which had a significance of less than 0.10 and complete results can be found in Appendix G.

Table 8

T-test of institutional factors for schools that offer online courses and those that do not

	Don't offer online courses		Offer online courses				
	Mean	*SD*	Mean	*SD*	*df*	*t*	eta squared
Interest comes from the administration	3.17	1.04	4.21	0.73	78	-5.22**	0.26
Interest comes from the students	2.67	0.90	3.37	0.88	79	-3.50**	0.13
Knowledge of online course options	3.02	1.21	3.69	0.76	79	-3.07**	0.10
Number of high school students	316	243	194	158	81	2.61*	0.08
Ease of recruiting qualified teachers	2.82	0.98	2.26	0.95	78	2.59*	0.08
Number of teachers in the high school	41.80	24.53	29.24	18.72	78	2.50*	0.07
Percentage of teacher turnover	12.43	8.68	16.88	9.15	79	-2.23*	0.06
Interest comes from the parents	2.61	0.80	3.00	0.99	78	-1.96	0.05
Percent of budget spent on technology	8.38	7.60	4.83	4.87	37	1.77	0.08

*$p < .05$, **$p < .01$

The results demonstrate that principals of schools that offered online courses typically had higher scores on the "interest comes from the administration" scale. The mean difference is -1.04 points on a 5-point Likert scale and the difference is statistically significant ($t = -5.22$, $df = 78$, $p < .01$). The eta squared value is 0.26 and can be interpreted using the following guidelines from Cohen (1988): 0.01 = small effect; 0.06 = moderate effect; 0.14 = large effect. The value of 0.26 would therefore indicate that the magnitude of the differences in the means is large. Similarly, the results also show that principals of schools that offered online courses typically had higher scores on the "interest comes from the students" scale as well. The mean difference of -0.70 points

is not as large, but the difference is still statistically significant (t = -3.50, df = 79, p < .01). The eta squared value of 0.13 is also smaller and indicates that the magnitude of the differences in the means is moderate to large.

Another difference between the two groups is indicated by the results from the "knowledge of online course options" scale. Principals of schools that offered online courses tended to rate this category higher then the principals from schools that did not offer online courses. The mean difference of -0.67 on a 5-point Likert scale is significant (t = -3.07, df = 79, p < .01) with an eta squared value which is also 0.13.

The results from the independent-samples t-tests also show that, on average, the number of students in a high school that offered online courses is typically smaller then in high schools that did not. The mean difference of 122 is significant (t = 2.61, df = 81, p < .05) and the eta squared value of 0.08 indicates that the magnitude of the difference is moderate.

Similarly, the results also show that, on average, the number of teachers in a high school that offered online courses is typically smaller then in high schools that did not. The mean difference in this case is 12.6 which is also significant (t = 2.50, df = 78, p < .05) and the eta squared value of 0.07 also indicates that the magnitude of the difference is moderate.

Other results indicate that principals of schools that offered online courses, on average, have a higher rating on the "difficulty recruiting qualified teachers" scale. The mean difference of 0.56 on a 5-point Likert scale is significant (t = 2.59, df = 78, p < .05) and the eta squared value of 0.08 signifies that the magnitude of the difference is moderate.

Additionally, principals of schools that offered online courses, on average, have a higher rating on the "percentage of teacher turnover" scale. Here the mean difference of 0.56 between these two groups is significant ($t = 2.59$, $df = 78$, $p < .05$) and the eta squared value of 0.06 indicates that the magnitude of the difference is moderate.

A chi-square test for independence was also conducted to compare the institutional factors for schools that offer online courses and those that do not. The results can be found in Table 9.

Table 9

Chi-square test for institutional factors and whether a school offers online course

Institutional factors	N	df	χ^2	p
Principal is male	77	1	0.08	0.78
Principal's nationality is U.S.	83	1	0.25	0.61
Largest student nationality group is U.S.	83	1	0.13	0.72
Largest teacher nationality group is U.S.	83	1	4.21	0.04*

*$p < .05$, **$p < .01$

The findings indicate that 74.3% of schools (26 out of 35) that offer online courses have a largest teacher nationality group that is U.S., while only 52.1% of schools (25 out of 48) that do not offer online courses have a largest teacher nationality group that is U.S.. These results, χ^2 (1, N=83) = 4.21, indicate that the difference is statistically significant between the largest teacher nationality group being U.S. and whether a school offers online courses. A phi coefficient of 0.23 indicates a small to medium effect.

Direct logistic regression was performed to assess the impact of a number of institutional factors on the likelihood that an international school would offer online courses. The logistic regression model contains three independent variables: interest from administration, whether it's a large secondary school with over 200 students, and the percentage of teacher turnover each year. The model containing these three explanatory variables is statistically significant, χ^2 (3, N=78) = 35.00, p < .001, indicating that the model is able to distinguish between schools that offered online courses and those that did not. The model explains between 36.2% (Cox and Snell R squared) and 48.6% (Nagelkerte R squared) of the variance of whether a school offered online courses, and correctly classifies 83.2% of the cases.

Table 10

Logistic regression model predicting likelihood of school offering online courses

	B	S.E.	Wald	*df*	*p*	Odds Ratio	95.0% C.I. for Odds Ratio	
							Lower	Upper
Interest from administration	1.61	0.46	12.14	1	0.00	4.99	2.02	12.31
Large school	-1.41	0.59	5.67	1	0.02	0.25	0.06	0.78
% teacher turnover	0.07	0.04	3.38	1	0.07	1.07	1.00	1.15
Constant	-6.59	1.94	11.55	1	0.00			

Note. Dummy variable:
Large School: > 200 = 1, 0 – 200 = 0

As shown in Table 10, two of the independent variables, interest from administration and large school, make a unique statistically significant contribution to the model. The strongest predictor of whether a school offers online courses is interest from

the administration, recording an odds ratio of 4.99. Controlling for all other factors in the model, this indicates that for every additional point on a 1-5 scale of the administration expressing interest in offering online courses, it is almost 5 times more likely that their school would offer online courses. The odds ratio of 0.25 for large schools indicates that, controlling for all other factors in the model, if the secondary school had over 200 students, the school is only one-fourth as likely to offer online courses.

Comparison of Institutional Factors to the Percentage of Graduates Who Have Taken at Least One Online Course.

The relationship between each of the institutional factors and the percentage of graduates who have taken at least one online course are investigated using Pearson product-moment correlation coefficients. The results reported in Table 11 show the factors which had a correlation coefficient of 0.10 or higher. See Appendix H for the complete set of statistics.

Table 11

Correlation for institutional factors and percentage of students taking online courses

Institutional factor	*r*
Number of teachers in the high school (n=80)	-0.34**
Number of high school students (n=83)	-0.31**
Interest comes from the school board (n=80)	0.27*
Interest comes from the parents (n=80)	0.27*
Interest comes from the administration (n=80)	0.26*
Largest teacher nationality group is U.S. (n=83)	0.25*
Ease of recruiting highly qualified teachers (n=80)	-0.23*
Interest comes from the students (n=81)	0.22*
Years as principal (n=76)	0.22
Knowledge of the different online course options available (n=83)	0.22
Ratio of students to face-to-face courses (n=61)	-0.21
Age of principal (n=73)	0.19
Percent of budget spent on technology (n=39)	-0.19
Number of face-to-face courses (n=61)	-0.18
Ratio of students to teachers (n=80)	-0.11
Technology is used in most classrooms on a regular basis (n=83)	-0.11
Largest Student Nationality Group is U.S. (n=83)	-0.10

*p < .05, **p < .01

These results demonstrate a moderate negative correlation between the "percentage of graduates who have taken at least one online course" and the "number of teachers in the high school", and similarly, the "percentage of graduates who have taken at least one online course" and "number of students in the high school". There is also a weak positive correlation between the "percentage of graduates who have taken online classes" and the rankings on the following scales: "interest comes from the school board", "interest comes from the parents", "interest comes from the administration", as well as "interest comes from the students". Percentage of graduates who have taken at least one online course is also weakly associated with the "largest nationality group is U.S." as well as "ease of recruiting highly qualified teachers."

Standard multiple regression was used to assess the ability of the four predictor variables, "number of high school students", "largest nationality group is U.S.", "years as principal", and "interest comes from the school board", to predict the percentage of graduates taking online courses. The total variance explained by the model as a whole is 27.3%, $F(4, 68) = 6.37$, $p < .001$. Regression coefficients are shown in Table 12, which shows that each predictor variable is statistically significant ($p < .05$).

Table 12

Multiple regression for predicting percentage of graduates taking online courses

Variable	*B*	*SE B*	β
Number of high school students	-.04	.01	-.32**
Largest teacher nationality group is U.S.	11.86	5.32	.23*
Years as principal	.68	.33	.21*
Interest comes from the school board	7.47	2.86	.27*
Constant	-12.34	9.49	

Note. $R^2 = .27$ ($p < .01$)
Largest Teacher Nationality Group is U.S.: yes = 1, no =0
*$p < .05$, $p < .01$

Summary

This chapter began with a comparison of the institutional characteristics of international schools which showed how diverse these schools are. Despite this diversity however, there were some similarities in the types of online courses being offered at these schools. These courses were largely being offered by an external course provider that was accredited and based in the United States. Although there was some variation, the most common reason for offering online courses were to offer courses not otherwise available at the school, and elective courses were the most common type. It was also shown that some institutional factors had a relationship to whether a school offered online courses and the extent to which students took these courses. The institutional factors showing the strongest association were the size of the school, interest coming from the school community, knowledge of online course options available, and the ease of recruiting highly qualified teachers.

CHAPTER 5

Discussion and Conclusion

Introduction

The purpose of this study is to identify the institutional factors which influence the extent to which international secondary schools offer online courses. This final chapter includes a summary and discussion of the research findings, the limitations of the study, and concludes with recommendations for future research.

Discussion of Research Findings

When over 70% of public school districts in the United States had at least one student enrolled in an online course in 2008 (Anthony G. Picciano & Seaman, 2009), it is surprising that only 27% of international schools (16 out of 60 schools) from the sample used in this study are currently offering online courses. Perhaps even more surprising, is the finding that only an additional 28% (17 schools) are currently considering offering online courses.

There could be many reasons for these low numbers, but one possible explanation could be that principals at these international schools are simply not aware of what online course options are available to them. For the schools that do not currently offer online courses, only 31% (15 out of 48 schools) of the principals responded with “agree” or “strongly agree” that they have knowledge of the different online course options that are available. Without this knowledge, it would certainly be difficult for these principals to make an informed decision of whether or not to offer online courses.

Which international schools might benefit the most by becoming more familiar with the different online options that are available? To answer this question it is helpful

to look at the schools that are currently offering online courses to see what characteristics they have in common.

One characteristic that emerges from this research is that smaller international schools are more likely to have online classes available to their students. When comparing the mean school size for schools that offer online courses (M = 194, SD = 158) to those that do not (M = 316, SD = 243), the results of the independent sample t-test are statistically significant, $t = 2.61$, $df = 81$, $p < .05$. This relationship is also evident in the logistic regression model in which it is found that secondary schools with over 200 students are only one-fourth as likely to offer online courses. The Pearson's product moment correlation between the number of high school students and the percentage of students taking online courses, $r(83) = -0.31$, $p < .01$, is also found to be statistically significant which further supports this relationship.

That smaller schools are more likely to offer online courses seems logical when you consider that the most common reason that principals of international schools gave for offering online courses is to offer courses not otherwise available. Principals from 31 out of 34 schools (91%) responded with "agree" or "strongly agree" as a reason for offering online courses at their school. Smaller schools, where their size limits the number of courses that they can offer, in particular could benefit from using online courses as a way to increase the number of courses they offer. These results seems to agree with findings by Setzer and Lewis in their survey of more that 2000 school districts in the United States in which they found that rural schools, which are also typically smaller in size, were much more likely to offer online courses than urban or suburban schools (2005).

Larger schools may still want to consider offering online courses, but perhaps for other reasons. As the size of the school increases, it is possible that the level of interactions between the teachers and the students may start to decrease. While there is no direct evidence to support this theory, there may be some indirect evidence. In this study it has been found that the correlation between the number of teachers in the high school and the reason for offering online courses as "to enhance communication between students and teachers" is statistically significant, $r(34) = .48$, $p < .01$.

It must be pointed out however, that only 4 out of 34 principals (12%) responded with "agree" or "strongly agree" that "enhanced communication between students and teachers" was the reason that their school offered online courses. It is surprising that this number is so low when the research points out that enhanced communication can be one of the major strengths of an online course (Barker & Wendel, 2001; Hughes, McLeod, Brown, Maeda, & Choi, 2005; Kozma, 1991; Zucker, 2005). These low numbers might be explained in part because the principals may be unfamiliar with this research, as this claim of enhanced communication can be somewhat counter intuitive. It is interesting to note that the principals who gave higher scores for the reason "to enhance communication between students and teachers" also gave higher scores for "technology is used in the classroom on a regular basis". Since this relationship is found to be statistically significant, $r(33) = .42$, $p < .05$, it might lead to the conclusion that principals who see the benefits of technology in the classroom are more familiar with the research, or it might also be that these principals are in a better position to directly observe that online courses can actually enhance communication.

Besides the size of the school, there are certainly other factors that might influence whether a school should consider offering online courses. One of these factors is the expenditure per student. As the cost of providing an education increases for a particular school, online courses become a more economical way to offer current courses or additional courses. This is supported in this study by the statistically significant correlation, $r(15) = .57$, $p < .05$, between the reason for offering online courses as "cost less than traditional face-to-face courses" and the expenditure per student. This motivation for offering online courses may be even more significant for international schools where, according to Greenlees (2006), the cost of attracting and retaining teachers is even more considerable then their U.S. counterparts.

Besides the higher costs that can be associated with attracting and retaining teachers, Greenlees (2006) also mentions the difficulties that these overseas administrators may have simply finding teachers to fill their vacant teaching positions. Schools with a higher teacher turnover rate or those that have difficulty recruiting highly qualified teachers might look to online courses to fill this need. This research shows that when comparing the mean percentage of teacher turnover for schools that offer online courses ($M = 16.88$, $SD = 9.15$) to those that do not ($M = 12.43$, $SD = 8.68$), the results of the independent sample t-test are statistically significant, $t = -2.23$, $df = 79$, $p < .05$. When one considers that some international schools have reported a teacher turnover rate as high as 50% per year, online courses might become an attractive option. This research also shows that when comparing the mean score for the ease of recruiting highly qualified teachers on a 5-point Likert scale for schools that offer online courses ($M = 2.26$, $SD =$

0.95) to those that do not ($M = 2.82$, $SD = 0.98$), the results of the independent sample t-test are also statistically significant, $t = 2.59$, $df = 78$, $p < .05$.

What other factors or characteristic do these schools that offer online courses seem to have in common? First, it seems reasonable to assume that if a school is offering online courses that there must be interest in doing so from the school community. According to the findings in this report, this interest seems to come largely from the administration where a mean of 4.21 was reported on a 5-point Likert scale. From here it drops off to 3.37 for students, 3.00 for parents, 2.85 for the school board, and lastly 2.71 for the teachers. The reasons for offering online courses that are most significantly correlated with the interest in offering online courses coming from the administration are "better suited for today's media orientated students", $r(33) = .50$, $p < .01$, "more innovative approaches that go beyond the traditional classroom", $r(33) = .48$, $p < .01$, and "more individualized student learning", $r(33) = .47$, $p < .01$.

With the interest in offering online courses in international schools coming largely from the administrators, it is interesting to note that this group does not seem to have any demographic characteristics in common. The finding from this study do not show any significant correlation between whether a school offers online courses and the principal's gender, age, nationality, years as principal or comfort level with technology. An interesting offshoot to this however, is that although the interest in offering online courses was much lower among the teachers, a significant correlation, $r(83) = .25$, $p < .05$, was found between the largest teacher nationality group being U.S. and the percentage of students taking online courses.

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Limitations of the Study

One limitation of this study is that a purposeful sample was used in addition to using a random sample of international schools. This purposeful group consisted of international schools which were using the external provider, the Virtual High School, to offer online courses. By targeting a portion of the schools used in the study, it could bring into question how well these results can be generalized to the whole population.

Another limitation of this study is that only the secondary school principals were invited to complete the survey. While much of the information is factual, such as the number of students in the high school or the percentage of student turnover, some of the information collected is open to opinion or interpretation. This would include questions such as how difficult is it to recruit highly qualified teachers and how dependable is the technology support at their school. The responses given to these types of questions by the principal might not have been reflective of the whole school community.

This study could also have been enhanced by using mixed methods (Creswell, 2009). Because of the distance and time difference of the international schools involved in this study, such research methods were not used. However, the use of methods such as interviews or focus groups could have added further insight.

Recommendations for Future Research

Since this is the first study to examine the factors associated with international schools that offer online courses, there is no other similar study which could be used for comparison. Further research is therefore recommended which would either confirm or bring into questions the results found here. If additional studies were done at some point

in the future, it would also provide longitudinal data which would allow for the tracking of changes in the use of online courses in international schools over time.

Future research should also be considered which branches out beyond international secondary schools. Additional schools that could be considered are elementary and middle schools, public and private schools in the United States, or even national schools located in other countries. This additional research would allow a comparison to be made with the results found in this study. The reasons for offering online courses and the institutional factors could be quite different for these different groups of schools. Besides identifying differences, these additional studies might also be beneficial in identifying characteristics that these groups of schools have in common.

As mentioned above, one possible limitation of this study is that it only surveyed secondary school principals. Future research could expand from these results and include other members of the school community. By including teachers, students, parents and the school board, along with the administration, it would allow for a more complete picture. Follow up interviews and focus groups might also provide additional insight.

Another focus of future research could be on the different online providers themselves. This study could provide specific information such as the cost of taking an online course, whether the courses offered are synchronous or asynchronous, and provider accreditation. Along with this information this study could also report more subjective data such as the advantages and disadvantages of the different providers as perceived by school administrators. This type of research would help to address the lack of knowledge related to online course options reported by a large number of secondary school principals.

Conclusion

There are numerous reasons that an administrator of an international school should consider offering online courses. The most compelling reason could be that online courses provide an easy way for a school to increase the number of courses that they offer. Another reason could be that schools with a high expenditure per student could use online courses as a way to reduce expenses. For schools that have a difficult time recruiting teachers, the reason for offering online courses could be to continue to offer core academic classes when a teacher could not be found.

Besides these basic reasons for offering online courses, there are other motives that an administrator might have. Online courses go beyond simply providing a student with a course option. They also provide the student with a unique learning experience. Some of the advantages of online courses are mentioned in the literature review in chapter 2 and include the following: 1) increase students' access to other people and resources, 2) provide for more individualized student learning, 3) contribute to innovative approaches that go beyond the traditional classroom, 4) help students hone ability to work independently, 5) help students to develop better time management skills, 6) better suited the needs of today's media oriented students, 7) improve communication between students and teachers and 8) improve communication among students.

Considering the potential benefits of offering online courses, it is desirable that the leadership of international schools to be well informed. The more knowledgeable that school administrator are, the better position they will be in to make sound decisions regarding offering online courses. It is the hope of this researcher that this dissertation will play a key role in helping to educate the leadership of these schools about the

advantages of offering online courses and how these courses might benefit their students. Another way for administrators to become better informed is to network actively with other administrators in international schools that are currently offering online courses. By doing so, it would allow school administrators to gain firsthand information on the various options that are available and the problems and successes these schools have had implementing online programs at their school. The regional educational organizations could also be instrumental in facilitating the sharing of information collectively, as well as within each of their regions. By expanding the professional development opportunities through workshops and institutions, these regional organizations could provide the leadership of international schools with the opportunity to become better informed about online courses. This would then allow these administrators to be in a better position to weigh the advantages and disadvantages of offering online courses within the context of their own international school.

Some administrators of international schools might be content with the status quo at their school and reluctant to change. Perhaps they might be more open to change if they ponder the following anecdote:

> Educators with a wry sense of humor and a healthy dose of realism often tell the story of what happens when a time traveler from 1908 visits 2008. He is completely overwhelmed by automobiles, cell phones, fast-food emporia, computers, and airplanes. Touring a modern workplace, he is at a loss to understand anything his 21st-century guides show him. But on entering one substantial brick building, he looks around and breaks into a grin. "Ah," he says, "Say no more. This is a high school." (Seltz, 2008)

The interest of these reluctant administrators might further be inspired if they remember one of the concluding statements from the National Education Technology Plan which states that, “Some of the most promising new educational approaches are being

developed outside the traditional educational system, through e-learning and virtual schools" (U.S. Department of Education: Office of Educational Technology, 2004, p. 45).

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Appendix A

Survey Instrument

Online Courses

Use of Online Courses

1. Please select one of the following:

- ◯ Your school is currently offering online courses to your students.
- ◯ Your school is considering offering online courses to your students.
- ◯ Your school is not considering offering online courses to your students at this time.

Online Courses

Types of Online Education Programs

2. Does your school offer externally developed online courses?

◯ Yes

◯ No

3. If yes, please list the online course providers (such as Florida Virtual School, Virtual High School, Apex, Class.com, University of Colorado, Sylvan Learning Centers, etc.).

Provider 1

Provider 2

Provider 3

---

4. Does your school offer internally developed online courses?

◯ Yes

◯ No

5. If yes, how many different courses?

6. If yes, in what subject areas?

Subject 1

Subject 2

Subject 3

Subject 4

Subject 5

Online Courses

Extent and Type of Student Involvement

7. What percent of your graduates this year will have taken at least one online course?

8. Of those students who take online courses, how many will they typically take in total while in secondary school?

9. What kinds of courses does your school offer online? (check all that apply)

- [ ] AP courses
- [ ] IB courses
- [ ] Remedial courses
- [ ] Core academic classes
- [ ] Elective courses

Other (please specify)

Online Courses

Reasons for Offering Online Classes

10. Please give your reaction to the following statements:

The main reason that your school offers (or is considering offering) online courses is because they:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
reduce scheduling conflicts for students.	◯	◯	◯	◯	◯
allow your school to offer courses not otherwise available.	◯	◯	◯	◯	◯
allow for more innovative approaches that go beyond the traditional classroom.	◯	◯	◯	◯	◯
allow for more individualized student learning.	◯	◯	◯	◯	◯
are better suited for today's media oriented students.	◯	◯	◯	◯	◯
costs less than traditional face-to-face courses.	◯	◯	◯	◯	◯
help students hone ability to work independently.	◯	◯	◯	◯	◯
help students to develop better time management skills.	◯	◯	◯	◯	◯
enhance communication between students and teachers.	◯	◯	◯	◯	◯
enhance communication among students.	◯	◯	◯	◯	◯
increases students access to other people and resources.	◯	◯	◯	◯	◯

Other (please specify)

Online Courses

Technology Environment

11. Please give your reaction to the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Your school has reliable internet access.	◯	◯	◯	◯	◯
Your school has dependable technology support.	◯	◯	◯	◯	◯
Technology is used in most classrooms at your school on a regular basis to support the curriculum.	◯	◯	◯	◯	◯
Your school has knowledge of the different online course options available.	◯	◯	◯	◯	◯
Your faculty has experience taking online courses as part of their own professional development.	◯	◯	◯	◯	◯

Online Courses

Community Interest

12. Please give your reaction to the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Interest for your school to offer online courses comes from the teachers.	◯	◯	◯	◯	◯
Interest for your school to offer online courses comes from the parents.	◯	◯	◯	◯	◯
Interest for your school to offer online courses comes from the students.	◯	◯	◯	◯	◯
Interest for your school to offer online courses comes from the administration.	◯	◯	◯	◯	◯
Interest for your school to offer online courses comes from the school board.	◯	◯	◯	◯	◯

Online Courses

School Demographics

13. In what country is your school located?

_____

14. How many students are in your secondary school?

15. What is the approximate percentage of student turnover in your secondary school each year?

16. What is the largest nationality group of the students in your secondary school?

17. Approximately what percent is this group?

_____

18. How many teachers are in your secondary school?

19. What is the approximate percentage of teacher turnover in your secondary school each year?

20. What is the largest nationality group of the teachers in your secondary school?

21. Approximately what percent is this group?

_____

22. How many different face-to-face courses are offered in your secondary school? (English 9, English 10, ..., Algebra 1, Geometery, ...)

23. What is your expenditure per student each year in US dollars?

24. What percentage of your budget is spent on technology?

Online Courses

25. Recruiting highly qualified teachers at your school is:

- ◯ Very difficult.
- ◯ Somewhat difficult.
- ◯ Average.
- ◯ Somewhat easy.
- ◯ Very easy.

Online Courses

Demographics

26. What is your gender?

- ◯ Male
- ◯ Female

27. What is your age?

28. How many years have you been a secondary school principal?

29. What is your nationality?

30. How would you rate your comfort level using technology:

- ◯ Very weak
- ◯ Somewhat weak
- ◯ Average
- ◯ Somewhat strong
- ◯ Very strong

Online Courses

Additional Comments

31. Would you be willing to participate in a follow-up interview?

- ◯ Yes
- ◯ No

32. Would your school be willing to participate in a case study?

- ◯ Yes
- ◯ No

33. Please include any additional comments that you feel may be helpful:

Appendix B

Letter to Administrators of Schools That Use the Virtual High School

Dear [administrator],

I am a mathematics teacher at the American Embassy School in New Delhi, India and I am currently a doctoral candidate at the University of Minnesota. As part of my dissertation I am conducting research to learn more about the use of online courses for students at international schools. Since your school has a connection with the Virtual High School I am asking if you would be willing to participate in an online survey.

The survey should take approximately 10 minutes to complete. The results will be summarized and made available to help other international schools which may be considering offering online courses. Your responses to the survey will be reported anonymously.

Clicking below indicates your consent:
CLICK HERE TO GO TO SURVEY

Thank you for your valuable time in participating in this survey.

Yours sincerely,

David Fischer
Head of Mathematics
American Embassy School, New Delhi

Appendix C

Letter to Administrators of Randomly Selected School

Dear [administrator],

I am a mathematics teacher at the American Embassy School in New Delhi, India and I am also a doctoral candidate at the University of Minnesota. As part of my dissertation I am investigating the use of online courses at international schools. I am gathering data from different types of international schools including those that are not offering online courses as well as those that do. I would really appreciate your participation in an online survey.

The survey should take approximately 10 minutes to complete. The results will be summarized and made available to help other international schools make decisions regarding the use of online courses. Your responses to the survey will be reported anonymously.

Clicking below indicates your consent:
CLICK HERE TO GO TO SURVEY

Thank you for your valuable time in participating in this survey.

Yours sincerely,

David Fischer
Head of Mathematics
American Embassy School, New Delhi

Appendix D

Follow-up Letter to Administrators

Dear [administrator],

This is a reminder to please help me collect information regarding the use of online courses in international schools by following the link below and completing the online survey. I am very interested in your opinion as the [title] of [school name], whether you offer online courses at your school or not. The survey should not take more than 10 minutes to complete.

Your support is greatly appreciated. Thank you!

David Fischer
Head of Mathematics
American Embassy School- New Delhi, India

Appendix E

Table of Online Course Providers

Table E1

Online course providers

Online Provider	Web Address	Accreditation
Apex Learning	http://www.apexlearning.com/	Northwest Association of Accredited Schools
Aventa Learning Systems	http://www.aventalearning.com/	Northwest Association of Accredited Schools
Brigham Young University	http://ce.byu.edu/is/site/	Northwest Association of Accredited Schools
Keystone National High School	http://www.keystonehighschool.com/	Northwest Association of Accredited Schools
Mathletics	http://www.mathletics.com/	Not accredited
Northstar Academy	http://www.northstar-academy.org/	Southern Association of Colleges & Schools
Sevenstar Academy	http://www.sevenstaracademy.org/	North Central Association
University of Missouri High School	http://cdis.missouri.edu/high-school.aspx	North Central Association
University of Nebraska Independent Study High School	http://nebraskahs.unl.edu/	North Central Association
Virtual High School	http://www.govhs.org/	Middle States Association of Colleges and Schools

Appendix F

Table of Correlation Between Institutional Factors and Reasons for Offering Online Courses

Table F1

Correlation between institutional factors and reasons for offering online courses

	Reduce scheduling conflicts for students	Offer courses not otherwise available	More innovative approaches that go beyond the traditional classroom	More individualized student learning.	Better suited for today's media oriented students	Costs less than traditional face-to-face courses	Help students hone ability to work independently	Help students to develop better time management skills	Enhance communication between students and teachers	Enhance communication among students	Increases students access to other people and resources
Reliable internet access (n=32-35)	.07	.22	.10	.08	.22	.16	.11	.16	.41*	.46**	.13
Dependable technology support (n=31-34)	.00	.26	.44*	.38*	.45**	.27	.43*	.45**	.48**	.50**	.51**
Technology is used in most classrooms on a regular basis (n=32-35)	-.18	.19	.30	.11	.24	.13	.20	.35*	.42*	.43*	.08
Knowledge of the different online course options available (n=32-35)	.30	.17	.380*	.50**	.49**	.33	.44*	.34	.29	.23	.47**
Faculty has experience taking online courses (n=32-35)	-.12	-.09	.12	.30	.08	-.04	.05	.05	.04	-.01	.19
Interest comes from the teachers (n=32-34)	-.08	-.15	.22	.24	.14	.31	.23	.13	.19	.16	.30
Interest comes from the parents (n=32-34)	-.05	.08	.41*	.46**	.35*	.42*	.54**	.54**	.45**	.41*	.55**
Interest comes from the students (n=32-35)	-.32	.01	.12	.09	.04	.23	.28	.30	.27	.18	.40*
Interest comes from the administration (n=31-34)	.35*	.18	.48**	.47**	.50**	.29	.39*	.41*	.29	.29	.40*

Interest comes from the school board (n=32-34)	-.08	-.05	.50**	.41*	.34	.30	.40*	.44**	.36*	.39*	.31
Number of high school students (n=32-35)	-.17	.22	.01	.00	.12	.05	-.07	.01	.11	-.00	-.18
Percentage of student turnover (n=29-32)	.02	.05	-.14	-.12	-.07	-.13	-.13	-.10	-.24	-.30	.06
Number of teachers in the high school (n=31-34)	-.11	.22	.24	.14	.35*	.04	.12	.23	.48**	.28	.05
Percentage of teacher turnover (n=31-34)	.18	.12	-.23	-.10	-.03	-.08	-.04	-.06	-.07	-.21	.12
Number of face-to-face courses (n=25-28)	.04	-.02	.20	.15	.13	.24	.16	-.01	.44*	.27	.28
Expenditure per student in US dollars (n=14-16)	-.18	-.33	.05	.18	-.20	.57*	.07	.42	-.07	.01	.35
Percent of budget spent on technology (n=13-15)	-.37	.01	-.26	-.18	-.06	-.24	-.27	-.30	.39	.23	-.36
Ease of recruiting highly qualified teachers (n=32-35)	.11	-.02	.27	.12	.03	.15	.11	.14	.32	.25	.07
Gender of principal (n=29-32)	-.10	.16	-.32	-.29	-.11	-.25	-.09	-.08	-.09	-.03	-.30
Age of principal (n=29-32)	-.01	-.06	.22	.00	.01	.07	.03	.14	.07	.13	.21
Years as principal (n=28-31)	.10	.30	.33	.07	.28	.16	.11	.39*	.26	.16	.11
Principal's comfort level with technology (n=31-34)	-.05	.06	.22	.12	.21	-.18	.16	.14	.22	.21	.10
Ratio of students to teachers (n=31-34)	.00	.13	-.27	-.03	-.10	-.04	-.15	-.14	-.32	-.33	-.27
Ratio of students to face-to-face Courses (n=25-28)	-.32	.14	-.09	-.01	.20	-.29	-.08	.12	-.14	-.14	-.44*
Majority of students are U.S. (n=32-35)	.15	.02	.32	.23	.13	.18	.11	.15	.31	.30	.41*
Majority of teachers are U.S. (n=32-35)	.40*	.05	.07	.13	.02	.05	.01	.08	.09	.12	.25
Principal is U.S. (n=32-35)	.27	.12	-.04	-.02	.04	.38*	-.15	-.03	-.14	-.07	-.05

* Correlation is significant at the 0.05 level
** Correlation is significant at the 0.01 level

Appendix G

Table of Comparison of Institutional Factors for Schools that Offer Online Courses and Those that Do Not

Table G1

Comparison of institutional factors for schools that offer online courses and those that do not

	Don't offer online courses		Offer online course				
	Mean	*SD*	Mean	*SD*	*df*	*t*	eta square
Interest comes from the administration	3.17	1.04	4.21	0.73	78	-5.22**	0.26
Interest comes from the students	2.67	0.90	3.37	0.88	79	-3.50**	0.13
Knowledge of online course options	3.02	1.21	3.69	0.76	79	-3.07**	0.10
Number of high school students	316	243	194	158	81	2.61*	0.08
Ease of recruiting qualified teachers	2.82	0.98	2.26	0.95	78	2.59*	0.08
Number of teachers in the high school	41.80	24.53	29.24	18.72	78	2.50*	0.07
Percentage of teacher turnover	12.43	8.68	16.88	9.15	79	-2.23*	0.06
Interest comes from the parents	2.61	0.80	3.00	0.99	78	-1.96	0.05
Percent of budget spent on technology	8.38	7.60	4.83	4.87	37	1.77	0.08
Ratio of Students to face-to-face courses	4.56	3.60	3.43	2.13	53	1.51	0.04
Interest comes from the school board	2.54	0.75	2.85	1.08	56	-1.43	0.03
Interest comes from the teachers	2.48	0.8	2.71	0.94	78	-1.14	0.02
Age of principal	46.76	8.60	48.81	7.47	71	-1.07	0.02
Ratio of students to teachers	7.28	2.21	6.71	2.76	78	1.03	0.01
Technology is used in classrooms	3.96	.80	3.77	0.97	81	0.96	0.01
Faculty has taken online courses	3.52	.74	3.66	0.73	81	-0.83	0.01
Expenditure per student in US dollars	11190	8218	9269	4931	26	0.82	0.02

Principal's comfort level with technology	3.89	.86	3.74	0.86	77	0.79	0.01
Percentage of student turnover	21.76	13.24	19.69	8.10	75	0.78	0.01
Reliable internet access	4.23	1.02	4.09	0.89	81	0.67	0.01
Dependable technology support	4.19	0.94	4.06	0.85	80	.64	0.01
Years as principal	8.02	7.18	8.55	8.74	74	-0.29	0.00
Number of face-to-face courses	71.67	53.45	68.89	53.33	59	0.20	0.00

*p < .05, **p < .01

Appendix H

Table of Correlation for Institutional Factors and Percentage of Students Taking Online Courses

Table H1

Correlation for institutional factors and percentage of students taking online courses

Institutional factor	Correlation
Number of teachers in the high school (n=80)	-0.34**
Number of high school students (n=83)	-0.31**
Interest comes from the school board (n=80)	0.27*
Interest comes from the parents (n=80)	0.27*
Interest comes from the administration (n=80)	0.26*
Largest teacher nationality group is U.S. (n=83)	0.25*
Ease of recruiting highly qualified teachers (n=80)	-0.23*
Interest comes from the students (n=81)	0.22*
Years as principal (n=76)	0.22
Knowledge of the different online course options available (n=83)	0.22
Ratio of students to face-to-face courses (n=61)	-0.21
Age of principal (n=73)	0.19
Percent of budget spent on technology (n=39)	-0.19
Number of face-to-face courses (n=61)	-0.18
Ratio of students to teachers (n=80)	-0.11
Technology is used in most classrooms on a regular basis (n=83)	-0.11

Largest student nationality group is U.S. (n=83)	-0.10
Faculty has experience taking online courses (n=83)	-0.09
Percentage of teacher turnover (n=81)	0.08
Gender of principal (n=77)	0.08
Reliable internet access (n=83)	-0.08
Interest comes from the teachers (n=80)	0.07
Percentage of student turnover (n=77)	-0.05
Principal's comfort level with technology (n=79)	-0.04
Expenditure per student in US dollars (n=33)	0.02
Dependable technology support (n=82)	-0.02
Principal in U.S. (n=83)	-0.01

*p < .05, **p < .01