

Dissertation Proposal for Defense

**Electronic Database Use in Public Schools: Demographic and Survey Data That
May Identify Indicators of Levels of Usage.**

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In keeping with one of Thompson's recommendations (Thompson et al., 1996) I propose to, "study the use of technology in the restructuring of schools; that is, in the changing of roles of students and teachers, and the organization of the classroom". A large metropolitan Florida school district spends several hundred thousand dollars each year to provide electronic database access for its schools. Currently, the school system can track which schools are accessing the databases; however, they have no way of knowing which teachers, or for what reasons, the databases are being accessed. I propose to develop a study that will answer these questions.

Purpose

The purpose of this study is to identify potential indicators as to why some schools make consistently greater use of the electronic databases provided to them for academic use while others make little or no use of these databases. Ancillary to this overall purpose will be the determination of the types of curriculum areas in which these resources are most often used.

Research goal

The goal of this research is to establish possible correlations between various school, student and teacher demographics, which may influence the use of electronic databases for instruction in schools.

Research Method

This will be accomplished by the use of a mixed-methods approach. A combination of data collection will occur. First, there will be an analysis of the access patterns of all of the schools in the school district. This data will be obtained by reviewing reports provided to the school system by the two primary electronic database vendors, InfoTrac and Grolier Online. From this original data, the researcher will identify those schools, which access the databases most. Next, the district will provide comprehensive demographic information about each school's faculty, students, and library collection in terms of number of volumes per student, and technological capabilities. Technological capabilities will include number of computers, the availability of a school-wide network, Internet accessibility from each school, and number of Internet access points in each school. Subsequently, each school will be surveyed to determine the familiarity of the faculty, in general, with the use of electronic databases. The survey will focus on some of the administrative types of concerns such as, does the school have a technology specialist and if so how is that person used; have the various curriculum area supervisors been proactive in making their personnel aware of, and/or offered training in ways that these databases may be incorporated into their curriculum and subsequently classroom activities.

Conceptual background of the problem

Many school systems spend significant amounts of money to purchase licenses to provide access to the most current information via electronic databases. As identified by a Technology Supervisor of a large Florida metropolitan school district, the district can

track which schools make the most use of this capacity to access these databases; however, they have no way of knowing how the information is being used at the school level. It would be extremely beneficial for them to be able to know and understand why some schools have higher levels of access and others do not. It would also be beneficial to know which types of teachers (both from a curriculum standpoint and a teaching styles standpoint) are making the most use of these resources. This study will only focus on the curriculum area use. A third area of interest would be to see if students in given curriculum areas in schools that access the databases regularly perform at higher levels on district wide curriculum tests. Analysis of these data would be a part of subsequent analysis.

Significance of the Study

"Currently, the available national information on classroom technology is skewed. We have ample data on the availability of computers and some information about their distribution among schools and students, but we know little about how computers or the Internet are used. The country would benefit from more and better information on the instructional role that computers play in classrooms and their effectiveness in achieving student learning" (NCES 2000).

As has been noted recently (Jonassen 1996, Thompson et al.1996, Reeves 2000) numerous studies have resulted in the finding of "no significant difference" when attempting to relate the benefits of technology use to more traditional forms of

instruction. As Clark (1994) stated, "Educational media alone do not influence the achievement of students". Since electronic databases are not generally used as an instructional tool as much as they are a resource to support instruction, it could be beneficial to know which types of schools make the most use of these resources in the support of their instructional programs.

The findings from this study may be valuable to a variety of educational professionals. First, not only the participating school district but many others who provide such services to their schools will be able to make determinations as to which types of schools may be in need of additional training in the use of electronic databases as a means of supporting the instructional program. Second, indications of training needs, should they appear, could give meaningful direction to future technology training in school districts. Finally, since no other studies were found that specifically addressed the use of this particular electronic research product in the public school domain, this study could establish a new focus for future research.

Definition of Terms

Users initiate the information access process. Users, both collectively and individually, engage in particular activities. Anyone looking for information is a user. Without the initial problem, question, query, significant imbalance, or need, neither information nor a way to access it is necessary.

Access refers both to the technologies that provide access and to the factors that may enhance or limit access. Access requires a user and a point of access. An access

point is a physical location. In this situation, the access point will be a computer connected in such a way as to be able to access the aforementioned electronic databases.

Information is the goal of access; in the sense that information is what users want to access. Access is only as useful as the information that is accessed.

The term "*hit*" will be defined as one access of a particular database. Although, once the database is accessed, there is no way of knowing what the search request may be or how many searches are run under one access or hit.

The Problem

A large metropolitan school district spends several hundred thousand dollars each year to provide electronic databases for its schools to access. Some schools access these databases with much greater frequency than do others. The school system would like to identify differences in the schools that might account for this situation. As a subset of this inquiry, some information relative to teacher knowledge of the availability and use of electronic databases for instructional purposes would be valuable.

Potential Research Questions

1. Are there demographic variables of a school that may correlate to a higher level of academic electronic database access from the school site?
2. Are there demographic variables of a faculty that may correlate to a higher level of electronic database access from the school site?
3. Are there demographic variables of a faculty and students' computer usage that may correlate to a higher level of electronic database access from the school site?
 - a. Do different levels of support by the Principal, media specialist, technology specialist (where applicable) and/or curriculum supervisors contribute to a higher level of use of the electronic databases?

- b. To what extent are teachers aware of training programs to assist them in technology integration?
 - c. Does teachers' home computer use impact the use of electronic databases at the school?
 - d. Is there a correlation between curriculum area and use of electronic databases?
4. Are there different types of access issues within the school district that would impact the use of the databases?
- a. Are all schools fully networked?
 - b. Is database access only available in the media center?
 - c. Do teachers have computers in the classroom from which databases can be accessed?

Review of the Literature

General Literature Concerning the Use of Technology in Education

In discussing the introduction of computers into American schools, Martinez and Mead (1988) note that perhaps the most important problem to be addressed is the continuing disagreement among educators about whether to teach computing per se or to integrate computing into the curriculum. This continues to be a topic of disagreement today and is central to this research. While "inclusion" is given significance in the sense of students being immersed in classroom environments, no such significance is given to the immersion of students in one of the most significant technological resources available to them for their own academic development.

Ramirez (1994) notes that in response to the changing role of education in society, schools, districts, and states are developing higher standards or expectations for what they want their students to know and be able to do. The development of higher order thinking

skills, which are most necessary in the workplace, consistently appear in those expectations. The development of knowledge about, and use of, electronic databases is an extension of higher order thinking skills in that analysis of the problem, development of the search strategy and locating of the appropriate information, analyzing and synthesizing of that information, and the ultimate resolution of the problem or question are all significant uses of critical thinking skills.

Papert (1994) posits that anything that we don't understand, we make a part of the curriculum. So, instead of using the new technologies as a means of developing a more constructivist based learning environment, we have instead developed "computing" as a part of the curriculum. If we are to ever change this mindset and begin accessing the power of the technologies, we must find new ways to innovate. Crawford (1996) frames this discrepancy between the possible and the actual uses of technology as the result of the significant tensions between traditional forms of educational practice with traditional educational technologies and the new forms of cultural activity associated with the creative possibilities of new and complex technological systems. These tensions are heightened by "the greater marketplace" (Privateer, 1997). This market for new technologies is driven primarily by a tradition based on the retrieval and storage of data rather than on reconfigured or constructive technologies that combine information and produce new knowledge systems (Hopson, 1998).

Information and Information Access

Information access is a physical, psychological, social, cultural, and political issue. It is all the relationships that exist when users access information. . The relationships involve cognitive, affective, and physical components. They are moderated

by cultural, sociological, and economic factors. They are subject to the constraints of technology, science, and education (Walster, 1996).

Library and Information Science research on access to information is drawn from different theoretical backgrounds, such as social and cognitive psychology, human factors, computer programming, and educational technology. Much of the research in this area is in the developmental stage.

Implementation of Technology and Curriculum Integration

Teacher ability to integrate technology-assisted instruction into the classroom routines could be influenced by staff development and technology support (Pisapia et al., 1999). Implementation plans should also find ways to assist teachers in classroom management and positive external reinforcement schemes. Although not the central focus of this study, indications of these concerns may appear through answers to some of the survey questions, which relate to teachers' awareness and level of knowledge of the electronic databases and their role in classroom instruction.

In the 1999 report by the Educational Research Service titled *Making a Difference in Our Children's Future*, the following summary of findings appeared.

1. Fifty-three percent of all teachers surveyed use software for classroom instruction, and 61 percent use the Internet for instruction.
2. Only 17 percent of teachers who use computer software for instruction say that it is a "primary resource related to classroom instruction"; 77 percent use it as a "supplementary resource"; and 6 percent use it as a "quiet time" or "bonus time" activity for students.

3. Only 9 percent of teachers who use Web sites for instruction say they are a "primary resource"; 88 percent use the Internet as a supplementary resource"; and 3 percent use it as a "quiet time" or "bonus time" activity.
4. Teachers who do not use software or the Internet for instruction are more likely to cite a lack of classroom computers than any other reason.
5. For teachers who do not use software, the expense of the software is listed as a major hindrance to its use. In addition, time for preparation for the use of software and the lack of alignment with state standards are other deterrents.
6. Forty six percent of teachers who use software for instruction say that matching it with state or district curricula is a "big" or "moderate" problem.
7. Eighteen percent of teachers who use software for instruction say their state or district provides lists of approved or recommended software titles; 12 percent say their state or district provides lists of titles that match curriculum standards.
8. Teachers who have been in the classroom for five years or less are not more likely to use instructional technology than those who have been teaching for more than 20 years. However, teachers who have had more training to integrate technology in the curriculum in the past 12 months are more likely to use software and the Internet in their classroom lessons.

Pierson's (2001) qualitative study of pedagogical expertise and technology integration discussed expert characteristics, which seem to translate to teachers who have effectively integrated technology into their teaching. Their primary characteristics were:

1. Take time during planning to use their knowledge about students and their experience of past teaching events to set goals for student learning.
2. Make a greater number of contingency decisions than non-expert teachers.
3. Consider management and instructional strategies ahead of time.

Although these characteristics should appear self evident, the significance of their correlation to the implementation of technology cannot be understated. In numerous studies of educational technology implementation, researchers have stated that one of the reasons for technology based experiments appearing to give a better result than conventional teaching strategies is the thoroughness with which the instruction is designed. This would also transfer to the use of electronic databases.

Cognitive Theory

Repeatedly, the comment has run through much of educational and educational technology research that a new paradigm is needed. However, things never really seem to change. In order for schools to address the economic and societal demands on education, the time has come for this change to occur.

The research in schemata and mental models (Winn 1980, Armbruster & Anderson, 1982, 1984; Dansereau et al., 1979; Holley & Dansereau, 1984) posits that the knowledge that we represent as schemata or mental models changes as we work with it over time. Anderson (1983) determined that this process of knowledge compilation and translation is a slow process. One of the biggest oversights in our field has occurred

when instructional designers have assumed that the task analysis should describe the behavior of experts rather than novices, completely ignoring the fact that expertise develops in stages and that novices cannot simply "get there" in one jump (Jonassen, 1996).

It is the researcher's considered opinion that this has been a significant deterrent to the implementation of technology in schools. Too often, the "experts" that run the technology departments of school systems expect everyone else to be like them. Therefore, they design training that they understand and believe will meet the needs of others. Unfortunately, this training is generally of too short a duration and offers little, if any, follow up or support. Teachers are given few opportunities to interact with their peers on collaborative curriculum development projects and therefore, unless they are very highly intrinsically motivated the technology simply sits in their rooms. Or, as Jonassen puts it, "If we try to teach the skills of the expert directly to novices, we shall surely fail" (Jonassen, 1996).

Another tenet of cognitive research relating to information processing also may be relevant in the consideration of training that will assist teachers in becoming more "automatic" in their thinking processes when identifying ways in which they may integrate technology based materials into their curriculum. The work of Shiffrin and Schneider (1977) which utilized a series of memory experiments to demonstrate that, with sufficient rehearsal, people automatize what they have learned so that what was originally a number of discrete items become one single "chunk" of information. With the addition of Anderson's (1983) work rehearsal strategies intended to induce "chunking" became part of the standard repertoire of tools used by instructional

designers. Although this strategy may not have yet been tested in the broader area of technology integration training, there seems to be a reasonable validity to a strategy that would "chunk" segments of the training, offer repetition and reinforcement of the strategies and slowly introduce and develop a myriad of techniques for the various curriculum areas; thus allowing teachers the time and support necessary to become "automatic" in their thinking of ways to imbed technology based materials into their curriculum.

Cognition as knowledge construction also offers insight for this study. Neisser's (1976) "perceptual cycle", which describes how what we know directs how we seek information; how we seek information determines what information we get; and how the information we receive affects what we know has direct bearing on both the teacher and student considerations of this study. The significance of knowledge construction for educational technology lies in its marking a shift away from didactic, content-specific instruction to building environments that make it easy for students to construct their understanding of knowledge domains (Jonassen, 1996)

The purpose of "design" as discussed by Simon (1981) and Glaser (1976) is to select the alternative from among several courses of action that will lead to the best results. The degree of our success as instructional designers relies on two things: (a) the validity of our knowledge of effective instruction in a given subject domain and, (b) the reliability of our procedures for applying that knowledge. As a collaborative effort between subject matter experts (teachers) and an instructional design specialist (researcher) it is hoped that this study will develop a training model which will prove

useful and successful for the integration of the use of electronic databases into various areas of the curriculum.

In an information age school, students should create their own meaning. This requires exploring stacks of fragments sorting, sifting, weighing and arranging them until a picture emerges (McKenzie, 1993). Collaborative learning, which is an excellent model for the integration of electronic database use into the classroom environment, extends the knowledge and skills of any one student and contributes to the skill development of the combination of students. Schwen et al. (1993) posit that learning is far more of a social process than we have conceded in the past. Resnick (1987) supports this by stating that pedagogy should emphasize 1) active participation by all learners (teachers and students), 2) a community of and for learning, 3) jointly constructed knowledge by the community, and 4) a more democratic relationship between those labeled students and teachers.

Information Seeking

Information seeking research attempts to identify the strategies invoked by those seeking information as well as the structure developed by the various access systems for allowing users to search. These studies identify the processes and procedures, cognitive processing, search strategies and result evaluation used by the subjects in an attempt to determine more meaningful ways in which searchers may be trained to be more effective in their searching. These studies also seek to identify ways in which search software and systems may be better designed to assist those attempting to locate information.

A number of studies (Bilal, 2000; Large & Beheshti, 2000; Hirsh, 1999; Sutcliffe et al., 2000; Chaim, 2000 and Fidel et al., 1999) have been developed, using a range of

age groups and searching experience levels, in an attempt to clarify ways in which students use the various electronic resources to locate information. Whether on the World Wide Web, in various levels and formats of electronic subscription databases, CDROMs, electronic encyclopedias, or online public access catalogs the general conclusions in all of these studies is that students do not have very strong capabilities for the successful use of these resources. Students tend to use more of a "blind" searching technique, with little understanding of the value of developing search strategies, terms and processes before launching on their mission. This is true for elementary level students as well as those in their final year of medical school.

The concept of imposed query, within which school assignments fall, is a relatively new way of looking at information seeking purposes. Gross (1998), in her discussion of imposed query states, "The imposed query is a new view of user behavior that differentiates between information seeking that is self-generated (internally motivated in response to the context of an individual's life circumstance) and imposed information seeking, which is externally motivated, being set in motion when a person gives a question to someone else to resolve." Within the context of this study, the determination of the adequacy with which students are able to understand, translate, identify sources, and retrieve, evaluate and synthesize information is a critical component. This is where the teacher's ability to integrate these methods into the curriculum becomes crucial.

Literature on Staff Development and Technology Integration

This section has yet to be developed.

Literature on the Physical Availability of Computers for Instructional Use

According to the President's Committee of Advisors on Science and Technology 1997 (p. 51), large scale data collection on technology in the classroom should address four issues:

- The availability of quality computers and Internet access;
- Whether computers and access are equitably distributed among schools and students within schools;
- How the technology is used;
- How the use of technology affects student learning.

Computer availability in schools has improved significantly since 1983, at which time there was 1 computer for every 125 students. In 1999 this ratio had improved to 1 computer for every 6 students (Coley, Cradler, and Engel 1997; U.S. Department of Education 2000b). This overall average student-to-computer ratio, however, hides two facts: the distribution of computers per student is skewed, and many computers included in that count may be old and have limited usefulness. In addition, a 1994 study showed up in a study by Glennan and Melmed (1996), in which 4 percent of the nation's schools had at least one computer for every 6 students, while 46 percent of the schools had one computer per 16.5 students and 10 percent of the schools had one computer per 28.5 students. Further, a 1998 national probability study sample of 655 elementary and secondary schools revealed, "over half of the computers are out of date. In elementary schools, almost two-thirds were found to be of limited capacity" (Anderson and Ronnkvist 1999, p.5). This is potentially problematic because older computers do not have the capacity to link to the Internet or run current multimedia applications.

Internet access existed at 35 percent of public schools in 1994, but soared to 95 percent by 1999 (U.S. Department of Education 2000). In 1999, in 18 percent of schools, however, access to the Internet existed at only one location thus making regular instructional use difficult in these schools (U.S. Department of Education 2000).

An often-asked question is, "Is there an equitable distribution of computers and Internet access among schools with high and low concentrations of poverty?" Anderson and Ronkvist (1999) found that schools with high concentrations of poor or minority students have fewer computers and are less likely to have Internet access. This same study concluded that large gaps in the quality of computer equipment available still exist. This gap also exists concerning Internet access. School with 70 percent or more of the students qualifying for free lunch had only 39 percent of the instructional rooms with Internet access, compared to 72 percent for schools with lower concentrations of students on free lunch (U.S. Department of Education 2000b). Such disparity of computer access could account for variations in the number of accesses made by schools to the electronic databases.

Method

The purpose of this study is to determine if there are certain demographic variables that may correlate with higher levels of academic electronic database access by some schools while others make little or no use of these databases. Ancillary to this overall purpose will be the determination of teacher variables that may have an impact on the use of these databases. The data gathered and the subsequent analyses of that data will be used to determine both the extent of teacher and student use of these databases, along with the determination of a need to develop a staff development strategy to enhance their usage.

Research Questions

5. Are there demographic variables of a school that may correlate to a higher level of academic electronic database access from the school site?
6. Are there demographic variables of a faculty that may correlate to a higher level of electronic database access from the school site?
7. Are there demographic variables of a faculty and students' computer usage that may correlate to a higher level of electronic database access from the school site?
 - a. Do different levels of support by the Principal, media specialist, technology specialist (where applicable) and/or curriculum supervisors contribute to a higher level of use of the electronic databases?
 - b. To what extent are teachers aware of training programs to assist them in technology integration?
 - c. Does teachers' home computer use impact the use of electronic databases at the school?
 - d. Is there a correlation between curriculum area and use of electronic databases?
8. Are there different types of access issues within the school district that would impact the use of the databases?
 - a. Are all schools fully networked?
 - b. Is database access only available in the media center?

- c. Do teachers have computers in the classroom from which databases can be accessed?

Site

The site for this study will be a large metropolitan school district. This district has 20 high schools (6 of which are magnet schools), 37 middle schools (8 of which are magnet schools) and 112 elementary schools (4 of which are magnet schools). In addition, there are 18 charter schools within the boundaries of this school district. The reason for choosing this school district as the site for this study is that the researcher, having worked in this district for 10 years, has a rapport with the necessary district personnel that will allow him to obtain the necessary access to information. In addition, the researcher was a media specialist in an elementary school when database access was first made available to the schools. It has now been five years since the first licensing agreements were signed and the researcher and school district administrators are interested in identifying access patterns and ultimately ways in which better use of these resources may be developed.

Sample

The source of the original sampling data, for this segment of this study will be the "hit" lists as generated by the two major database vendors supplying databases to this school district. In this study, the term "hit" refers to each individual access to a database. The hits are counted as the individual enters either of the databases. The two databases used by this particular school district are InfoTrac and Grolier Online. The school district receives monthly reports from the vendors. These reports show which schools have accessed (hit) the databases and how many times each school has done so. One

limitation to this data is that it does not tell which sources within the main database were accessed. The reports also do not delineate secondary searches that may occur. In other words, all the data can tell us is that school X accessed the specific database Y times during a particular time period (usually one month). Several sets of demographic information about each of the district's schools will also be made available to the researcher for correlational analysis.

The selected school district is the twelfth largest district in the United States. As such, it offers a cross section of economic, ethnic and cultural diversity with which to develop a variety of correlational variables.

Analysis of Data

Multiple regression analyses will be used, in those instances where the data are continuous, to analyze the data and identify patterns. The dependent variable will be Number of Hits while the independent variables will include numerous factors. These factors are shown in the set of Tables that follow. Other forms of analyses will be added as the data are collected and these additional analyses are determined to be necessary. One such analysis is expected to be an ANOVA for use in the analyses of categorical data, which may arise.

The following sets of Tables illustrate some of the types of data that will be gathered and some of the independent variables that will be analyzed.

Table 1 General Information for High Schools

School	Size	% of Cap.	SES % on free/red. lunch	Student Gender		Type	Category	# Media Spec.	Technology Specialist?
				M	F				
ES1	1243	143	10.75			Elem	General	1	N
ES2	842	62	74.65			Elem	General	1	Y
ES3	427	116	45.93			Elem	MagnetT	1	Y
MS1	1711	130	27.89			Mid	General	2	Y
MS2	1455	97	43.02			Mid	General	2	N
HS1	1715	87	37.58			High	MagnetP	2	Y
HS2	2364	100	45.5			High	General	2	N

The information shown in this table is readily accessible from the district's web site. However, the empty cells represent information that will have to be obtained by other means, including the school district's demographic databases. This table will be used to give a general overview of the school populations. All schools in the district will be included in this table. The one piece of data that I had not considered but found on the web site is the column labeled % of Capacity. This data may have unanticipated significance, especially for those schools that are significantly over capacity.

Note: MagnetT=Technology MagnetP=Performing Arts

Table 2 Student Gender and Ethnicity by School

School	Af. Am.		Asian		Hispanic		White		Other	
	M	F	M	F	M	F	M	F	M	F
ES1										
ES2										
ES3										
MS1										
MS2										
HS1										
HS2										

Given the diversity of this district's student population, this information could offer insights as to the gender and ethnicity traits that are likely to be indicative of the use of electronic databases.

Table 3 Number of Hits on Electronic Databases by School

School	InfoTrac	Grolier	Total (average)	High/month	Low/month
ES1					
ES2					
ES3					
MS1					
MS2					
HS1					
HS2					

This data is of primary importance. It will be the basis for all other analyses. Separating the data by vendor may give the school system indications of which database offers the best service and/or widest range of sources. In addition, the High month/Low month data may also give indications of instructional patterns within the school year. These patterns could be a source of additional analysis.

Table 4 School Patterns of Use by Month Using Total for Both Databases

School	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
ES1										
ES2										
ES3										
MS1										
MS2										
HS1										
HS2										

Several district administrators are interested to see if the access to the databases shows significant spikes and drops depending on other activities that may be occurring in the school(s). Testing times are of special interest.

Table 5 School Patterns of Use as a Proportion of Student Population

School	Students	Hits	Ratio of Hits to Students
ES1			
ES2			
ES3			
MS1			
MS2			
HS1			
HS2			

Analysis of this data in conjunction with other patterns such as the Ethnicity and Gender data could give indications of the student strata from which databases are most frequently accessed.

Table 6 School Patterns of Use in Relation to SES

School	SES	Hits	Correlation of SES to Hits
ES1			
ES2			
ES3			
MS1			
MS2			
HS1			
HS2			

This data may be used to determine if SES of the school affects access to databases. In this district many low SES schools have better access capability than do other schools with more moderate SES. Determining if those low SES schools with strong access capabilities are in fact using that capability would be a significant finding.

Table 7 School Patterns of Use in Relation to Number of Holdings in Library

School	Volumes per Student in Library	Hits	Ratio of Volumes per Student to Hits
ES1			
ES2			
ES3			
MS1			
MS2			
HS1			
HS2			

It is of particular interest to the researcher to see if there is a correlation between those libraries with larger holdings and a higher access rate by their students.

Table 8 Faculty by Gender and Age

School	Gender		Age									
	M	F	20-29		30-39		40-49		50-59		60-	
			M	F	M	F	M	F	M	F	M	F
ES1												
ES2												
ES3												
MS1												
MS2												
HS1												
HS2												

This information will be used to determine if a faculty with a particular age group in the faculty has varying access rates than a faculty of a different age make up.

Table 9 Faculty by Gender and Years of Experience

School	1-5	6-12	13-20	21-30	30-
ES1					
ES2					
ES3					
MS1					
MS2					
HS1					
HS2					

This information will be used to determine if schools with more experienced faculty have a higher rate of access than those with less experienced faculty.

Table 10 Faculty by Gender and Highest Degree Held

School	B.A.		B.S.		M.A.		M.S.		Ed.S.		Ed.D.		Ph.D.		Other	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
ES1																
ES2																
ES3																
MS1																
MS2																
HS1																
HS2																

This information will be used to determine if level of degree and/or gender have any significant correlation to the use of electronic databases for instruction.

Table 11 Faculty by Gender and Ethnicity

School	Af. Am.		Asian		Hispanic		White		Other	
	M	F	M	F	M	F	M	F	M	F
ES1										
ES2										
ES3										
MS1										
MS2										
HS1										
HS2										

This data will be analyzed to determine if gender and/or ethnicity correlate to access rates of databases.

Many of correlational comparisons may be made from the combinations of the various demographic data and the data provided by the academic electronic database vendors. These will be developed in more detail as the study progresses.

Limitations

There are several limitations to this study. First, there is no way to enumerate the number of accesses to the databases by either teachers or students from their home computers or computers used in locations other than school sites. The database vendors can only track the total number of public accesses but have no way of identifying the users. Second, not all school sites have equal access capabilities. This limitation will be addressed to some degree in the second segment of the study by several questions on the teacher survey. Third, at best the hit counts are gross estimations of actual accesses. Vendor records only record the original access and do not furnish a tracking of the number of searches performed while in the database. Once a user is in the database, they could be there for an indefinite amount of time and make significant use of the materials, or they could enter and exit within seconds. There is no discrimination as to the quality of length of the access.

Staff Development as it Relates to Technology Integration

Technology integration has been underway in schools since the mid 1970s; however, after 25+ years of implementation, there is little significant impact from these integration attempts. Staff development has always been a problem in school districts. Oftentimes it seems as if teachers are expected to just "pick up" the newest concept or idea and "run with it." Teachers, like all other humans, generally fit into the 80/20 pattern. In this case that means the 20 percent of the teachers may have "picked up" (learned it on their own) on the use of technology in their classrooms while 80 percent have not.

It is the researcher's belief that, in large part, inadequate staff development may be a contributing factor to this occurrence. Therefore an additional component of the study will involve a survey of teachers from a randomly selected segment of the *high*, *moderate* and *low* accessing schools to determine their level of knowledge and attitudes about the use of technology in their instruction, specifically academic electronic databases. For this purpose, *high*, *moderate* and *low* will be defined by the school's position within the Hits Per Student data. Schools in the upper 33% will be classified as *high*, the middle 33% will be classified as *moderate* and the lower 33% will be classified as *low*. Having no other point of reference for this definition, these distinctions were arbitrarily determined by the researcher.

When implementing any type of new concept, method or procedure the researcher's observation has been that staff development, when it occurs at all, oftentimes fits into one of two patterns. The first pattern is when staff development occurs and then the teachers do not receive the materials (in this case technology or software) for many months after the training. The second is when the materials arrive in the classroom and teachers do not receive any training for many months after the materials have arrived. Either of these scenarios leads to many teachers losing interest in the new concept, method or procedure before it ever has a chance to "get off the ground." This component of the study will be designed to determine if either of these scenarios, or the worse case scenario in which they were just never told about the databases, occurred with regards to the implementation of the academic electronic databases.

Site

The site for this part of the study will be the same school district described earlier. However, in this part of the study, a random selection of the schools will be used in which to survey members of the faculties. The purpose of these surveys will be to determine teachers' knowledge of, training in, and experience with the use of the databases.

Sample

The sample for this part of the study, as mentioned above, will be a random selection of the schools from the large metropolitan school district. In the first segment of the study, schools will be identified as *high*, *moderate* or *low* with regards to their number of Hits. In this segment, two schools from each of these categories will be randomly selected for further study. At the request of the district administration, this sample selection will be stratified to include a proportionate number of high, middle and low SES schools. Once the schools have been identified then teachers will be randomly selected from the faculty to participate in a survey. The purpose of the survey will be to determine the teachers' individual technology literacy, in this case specifically relative to the use of computers, and their awareness and use of the electronic databases.

Data Analysis

The following questionnaire will be used to gather both general and specific data about the teacher's background with computers, the level of support for technology use at their school, their knowledge of the existence of the databases and whether or not they

were giving any training in the use of the databases for instructional purposes.

Additional demographic information will also be collected.

Note to reviewers: This survey is not yet uploaded to a server. I am working with a colleague to accomplish this before the next class meeting. I will send the URL to you as soon as it is uploaded. With a little luck, this should be accomplished prior to April 15. I will forward the URL as soon as it is operational.

Figure II.1 Teacher Survey of Technology Background and Database Awareness

Item #	Question	Yes	No	NA
1	I have a computer at home			
2	I learned to use my computer at home before I used the computer at school			
3	I learned to use the computer at school first			
4	My school is fully networked			
5	Only certain parts of my school are networked			
6	I have a computer in my classroom			
7	I have more than one computer in my classroom			
8	I have Internet access from my computer in my classroom			
9	The computer(s) in my room are used by the students			
10	I have attended in-service training offered by the school district in the use of computers in the classroom.			
11	I am aware of training opportunities offered by the school district in the integration of technology into classroom activities.			
12	My school has offered training in the integration of technology into the curriculum.			
13	I am interested in integrating technology into my curriculum area.			
14	I would attend training to assist me in learning how to integrate technology into my curriculum.			
15	I believe the integration of technology into my curriculum could benefit my students.			
16	My Principal is supportive of the integration of technology in the various curriculum areas of the school program			
17	The media specialist in my school encourages the use of technology in our teaching.			
18	My school has a technology specialist to assist with the use of technology.			

Item #	Question	Yes	No	NA
19	The technology specialist offers periodic training to help us learn new software/hardware.			
20	The technology specialist will assist with the development of instructional plans for using the technology in my teaching.			
21	The technology specialist only deals with technical problems			
22	My curriculum area supervisor disseminated information to teachers about the availability of the academic electronic databases made available to us by the school system (InfoTrac and Grolier Online).			
23	My curriculum area supervisor made training in the use and integration of the electronic databases into the curriculum available to teachers.			
24	I have developed assignments that require my students to access the electronic databases licensed by the school district.			
25	I have made my students aware that electronic databases are available through the school system for them to use as research resources.			
26	Number of years of teaching experience (write in number)			
27	Gender (circle) Male Female			
28	Ethnicity (circle) White Black Hispanic Asian Native Am. Other			
29	Teaching level Elementary Middle School High School			
30	Subject taught (circle) Math English Soc. St. Science Reading Vocational Other (please specify)			

Note: This survey will be adapted to an electronic form and posted on a server for access and completion by teachers in the school district.

Pilot Test of the Survey

This survey will be pilot tested using graduate students to whom the researcher will have access through two sections of a graduate level course being taught in the summer term of 2002 at USF. The survey will be mounted in a Blackboard course site where the students can access the survey and maintain completely anonymous. Many of the students will be teachers who are in the Master's degree program in Library and Information Science at USF. Others will be teachers who are taking course work to gain

their Media Specialist certification. Although this group will be a convenience sample, they will come from various geographical regions of Florida and are employed in a variety of sizes of school districts.

Analysis of Survey Data

A multiple regression procedure will be used to analyze the correlations between each of the continuous independent variables and Number of Hits on the electronic databases. This analysis will provide the researcher with estimates of both the magnitude and statistical significance of the relationships between the variables and Number of Hits. An ANOVA will be used for statistical analysis of the categorical variables.

In addition, a path analysis may be used to test certain hypothesized links between specific variables and their correlation to Number of Hits. The specific variables that the researcher hypothesizes may have a correlation to Number of Hits are:

1. Computer at home
2. Attended training in the integration of technology
3. Supportive Principal
4. Supportive media specialist
5. School based technology specialist
6. Gender
7. Years of experience
8. Curriculum subject taught
9. Supervisor intervention/support

It is the researcher's contention that the combination of the ANOVA, multiple regression and path analysis methods of analysis will yield a rich correlational study.