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DEVELOPING CRITERIA FOR CHOOSING
BIBLIOGRAPHIC DATABASES IN
HIGH SCHOOL LIBRARIES

by
Darlene Michel

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree in the Graduate Division
of Rowan University
April 27, 1998

Approved by

Professor

Date Approved May 9, 1998

ABSTRACT

Darlene Michel. Developing Criteria for Choosing Bibliographic Databases in High School Libraries. 1998. (Under the direction of Dr. Holly G. Willett, Program in School and Public Librarianship).

This study developed criteria for choosing bibliographic databases for high school libraries. A survey was conducted to find out students' opinions about the databases that they use in school to access books, periodicals, and newspaper articles. The survey covered frequency of database use, favorite and least favorite databases, reasons for using the databases, desirable and undesirable characteristics of databases, and types of searching that were used. The survey was administered to 85 students in four 11th grade college-preparatory English classes after a class period devoted to database searching for an assignment. All students completed and handed in the survey. Conclusions were made based on the percentages of students who answered each part of a question. Students were observed during the time that they used the databases to determine motivation level, frustration, staying on task, and length of time spent searching. Most students (71 out of 85) use the databases fewer than five times a month. Students liked databases that contain full-text articles, are easy to navigate, provide quality results, and work quickly. Those characteristics were incorporated with others to develop a list of criteria for educators to use when choosing databases for high school libraries.

MINI-ABSTRACT

Darlene Michel. Developing Criteria for Choosing Bibliographic Databases in High School Libraries. 1998. (Under the direction of Dr. Holly G. Willett, Program in School and Public Librarianship).

This study developed criteria for choosing bibliographic databases for high school libraries through a survey and observation. Most students (71 out of 85) used the databases fewer than five times a month. Students liked databases that contained full-text articles, were easy to navigate, provided quality results, and worked quickly.

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Chapter One

Introduction

The use of CD-ROM and online bibliographic databases to access information is an integral part of any research project. In the past, research performed in a library depended upon information found from searching the card catalog and from searching print versions of encyclopedias, atlases, serial articles, and abstracts.

Today researchers of every age are being instructed in the use of CD-ROM and online databases that contain journal articles, abstracts, book reviews, encyclopedias, and many other sources of information.

Most children and young adults are now being taught in their schools to use these CD-ROM and online search programs. But more importantly, in the future, everyone will be taught to use computer databases and other educational programs when they are in elementary and secondary school. Therefore, it is important to design and choose CD-ROM and online bibliographic software while keeping in mind what features children and young adults find most “attractive” about it. In other words, what are those features of CD-ROM and online bibliographic software that children and young adults like most? What features do they dislike?

Software designers need to avoid designing CD-ROM products for schools based on what they think children or young adults will like or even based solely on what the designers personally want for their programs. Caftori (1994) found that “for designers, it is also not enough to embed attractive characteristics in the software because these can easily become diversions from the real goals. Educational objectives cannot be met using ‘glossy packaging’ alone. And it sells short the capacity of computers to aid learning” (p. 65). Software must also produce results that students can use. Quality of information

must be considered along with usability and attractiveness. Everyone will start using software as a child or young adult so it must be designed based on what children and young adults like most about educational software without compromising the educational purposes of the programs.

Schools need to choose quality CD-ROM and online software that contain those components that students like best and that meet curricular and personal needs. This ensures frequent use. Schools cannot afford to make the mistake of purchasing CD-ROM and online software that children and young adults do not like.

In a study done by Dr. Mary P. Mauldin (1996) designed to obtain middle school students' opinions on what they like about software and take that information and design programs for the students, she concludes that, "It was the students who gave the design team creative ideas and new ways to look at situations" (p. 92). Obviously, designers need help from school students on how to construct all kinds of educational software.

In a school, most CD-ROM and online bibliographic software can be found in the library or media center. In the future, with the advent of more classroom computers, teachers will have many CD-ROM and online search programs that students can access at any time during the school day. It is very important that students using the software do not feel hindered or frustrated by it because using the software as a research tool is, in many cases, an integral part of the curriculum.

It is essential as well as practical, that educators choose CD-ROM and online software using set criteria that are obtained from student opinion and observation of students. It is also practical and essential for software designers to integrate those same criteria into the creation of future bibliographic products, as well as any other type of educational software. This will lead to greater success as well as creativity and innovation.

The purpose of this thesis was to obtain information from students as to the specific criteria that comprise good CD-ROM and online searching software. By looking at and trying to understand the information-seeking behavior of students as well as hearing their opinions, a list of design features could be compiled to aid educators in choosing software and software companies in designing it.

It was very important to factor in things such as motivation (energy level, enthusiasm,

overall view of the assignment and search), searching behavior (does the student do a thorough search, does the student give up quickly, etc.), complexity of assignments (what is the topic?, what are the teacher's expectations?), and finished assignments to determine if students are using the various software programs in their intended ways or to their fullest potential. If they were not, it was important to consider why that is--if it is the student, the software, or a combination of both. It is then important to ask questions if different or improved software could change that.

To find out this information, the researcher observed the research tendencies and habits of several classes of young adults using CD-ROM and online search software in the setting of the Woodstown High School media center and a writing lab over approximately a 10 week period. It was important to take into consideration the types of research assignments students received and compare those to how long they spent searching, their behavior while searching, and how long the actual search lasted. Four classes were chosen to take part in the actual data gathering at the end of the 10 weeks.

A survey consisting of structured questions attempted to make clear what students liked and disliked about the CD-ROM and online bibliographic software that they used in the media center and writing lab. Observation of the students at the search terminals determined their searching behavior. They were asked to "talk through" a search to determine how valid their comments were about the software, based on their behavior while searching.

The research concluded with the creation of a list of criteria for schools to refer to when choosing educational CD-ROM and online search software and for software companies to refer to when designing their educational products. Also provided in the thesis is an annotated bibliography of the educational CD-ROM and online search/reference software that were included in this study.

Chapter Two

Literature Review

In the past, reference sources mainly were composed of “print publications consulted for facts or background information, as an encyclopedia, dictionary, atlas, yearbook, etc.” (Stein, 1968, p. 1108). Today, reference sources have gone beyond print form and have entered the electronic realm. With the advent of the CD-ROM in the mid 1980s, software developers worked hard at turning out quality reference products that they hoped would serve as useful substitutes or even improvements on their bulky and multi-volumed counterparts.

Today there are thousands of CD-ROM and online reference titles on the market. Many, however, are not of good quality. Users are discouraged by them because they are difficult to use. This is especially distressing in a school media environment. Today’s students, brought up in the “information age”, rely heavily on electronic CD-ROM reference and online bibliographic databases when confronted with a research assignment. If a particular database is difficult to use or confusing, the student may become frustrated and unmotivated. The assignment may not be completed to the best of his or her ability.

Schools need more information on how to choose CD-ROM and online databases that provide a lot of data and are liked by students. The key to creating that information lies in determining what students like and dislike about bibliographic software. After all, they are the primary users. Many times software purchasing is left up to one person who may or may not be prone to “impulse buying” because he or she does not know what makes a quality CD-ROM. “Many times a knee-jerk reaction will result in an ill-advised purchase that does not benefit the students” (Collura, 1995, p. 33).

To find out what students like and dislike about CD-ROM and online databases, it is important to observe them, both obtrusively and unobtrusively when they are using

different reference titles. By observing their information seeking behavior, gathering their personal opinions on the software, and looking at their motivation level, a set of criteria can be created to aid schools when choosing reference software. There has not been a lot of research conducted on the use of bibliographic databases by high school students. Rather, most of the sources used in this literature review refer to CD-ROM programs such as encyclopedias and atlases. Information pertaining to that type of software can also be applied to bibliographic databases because both are considered reference products in which the user must search for information.

CD-ROM and Online Databases

Scholars have identified many characteristics of educationally effective and successful CD-ROM and online programs. These programs should “provide powerful search engines that help you delve through a wealth of information to find out more about the topic you’re looking for” (Mooney, 1996, p. 306). A good CD-ROM or online title will make available to the user enough quality and quantity of information so that he or she does not feel the need to consult other sources because the electronic product was not helpful. A high-quality piece of CD-ROM software does things that other reference sources do not do as effectively. “None of them go overboard on multimedia, and each uses clear, ‘obvious’ interfaces rather than incorporating an artistic or game-like ‘explore and guess’ approach” (Crawford, 1996, p. 52).

In 1996, a software designer decided to consult with middle school students on what features they liked and disliked about CD-ROMs to help her in designing future programs.

“Students requested: challenging programs, clear directions, video, easy access in and out of programs, high quality color and graphics, sound effects, choices, and a brief introduction to the program” (Mauldin, 1996, p. 91).

“Online databases should be used to expand the coverage and scope of the reference collection. They allow a library to access reference materials they would not otherwise have” (Tenopir, 1988, p. 66-67). They provide a never-ending source of information as long as they are kept current by being updated on a regular basis. Full texts of wire services, magazines, and newspapers are especially good choices for school libraries that

have limited print resources and do a lot of research using current events.

Just as there are many good characteristics of CD-ROM and online reference software, there are also many bad ones which often result in the product not being worth the trouble it takes to run it. "Multimedia encyclopedias tend to be short on information because if you ran all the text, pictures, and multimedia clips that are now *de rigueur*, it wouldn't fit on a single 660 MB CD" (Howard, 1995, p. 95). In other words, there is not enough content. Many programs give small bits of information when the user needs a lot more. Others have inaccurate or incomplete data because the material is dated. Still others have interfaces that are confusing and difficult to work with (Manes, 1995). The opposite criticisms are made about online databases. Jasco (1994) feels that "CD-ROM databases and software are far ahead of their online counterparts in image representation of information" (p. 43). The author goes on to criticize full-text online databases because they are "exactly that--full text. It is full text, but lacking the charts, figures and color photographs essential to full understanding of an article" (p. 44).

CD-ROM and Online Evaluation

Those good and bad characteristics have prompted others to develop criteria with which to judge educational CD-ROM and online products. Some CD-ROM criteria may not directly pertain to bibliographic databases (multimedia, video, games, etc.) but those which deal with content and ease of use are relevant to the successful use of databases. The California Software Clearinghouse (1995) recommends that educators rate the following characteristics when evaluating software:

Instructional Design	Logical development of content/Stimulates critical thinking. Pedagogically sound. Main objectives readily identifiable. Multiple interactive paths. Access/control is simple and direct. Presentation design appropriate for grade level. Suitable instructional support materials.
Content	Accurate, current, thorough, relevant. Can be used across disciplinary boundaries. Appropriate for grade level.

Curricular Match	Supports what is commonly taught in schools at this grade level. Supports instructional concepts and themes embodied by [your state] curriculum frameworks.
Interest	Motivating. Intellectually stimulating. Actively engages the students.
Technical	Operates efficiently with minimum delays. Visual and audio reproduction are of high quality (p. 227).

In a similar fashion, one software reviewer recommends that when evaluating CD-ROM encyclopedias, one should rate the following:

“completeness of information, multimedia content, including video clips, animations and sound bites; kid-friendliness (mainly entertainment value to those with limited attention spans); and ease of use (how the information is organized, how well the text is integrated with the multimedia features and how quickly you can retrieve)” (Henricks, 1997, p. 157-158).

Carol Tenopir (1987) warns that when choosing online databases one should look at the issue of quality control. “Quality control is actually not a single issue, but involves several categories:

- quality of the database itself
- quality of the sources that are used to create the database
- quality of the telecommunications link
- quality of the online vendor
- quality of the online searchers and the service they provide as intermediaries”

(p. 124).

Understanding what is good and bad about reference CD-ROMs and online databases is important in developing criteria for evaluating different software titles for educational purposes. But it is not enough to only know what others have written. By looking at the ways in which students seek out information on CD-ROM databases, the evaluator should keep the students’ needs in mind when choosing appropriate programs.

Information Seeking Behavior

There is a minimal amount that is written in the field of information seeking behavior of students in electronic databases. There is even less that is written on applying that behavior to software selection and design. In his book , *Information seeking in electronic environments* (1996), Gary Marchionini states:

“The information seeking process is delineated in eight steps:

(1) recognize and accept an information problem, (2) define and understand the problem, (3) choose a search system, (4) formulate a query, (5) execute search, (6) examine results, (7) extract information, and (8) reflect/iterate/stop” (p. 483).

By looking at the way students perform these functions in an electronic environment, it is possible to design or choose software that supports the search habits of students in a particular grade or school. “Systems designed principally for the convenience of the designer or the institution rather than the end user impede productive and satisfying work” (Marchionini, 1996, p. 483). It is difficult for students to successfully perform a database search to the best of their ability if they are not comfortable with the search program. Software that is compatible to their research needs and behaviors will motivate students to use the system and access all avenues of inquiry on their particular topic.

Motivation

“Motivation is usually defined as an internal state that arouses, directs, and maintains behavior” (Eggen, 1997, p. 330). This study will attempt to determine the presence or lack of extrinsic motivation in students while they perform reference searches. “Extrinsic motivation refers to motivation to engage in an activity as a means to an end” (Thornburg, 1986, p. 342).

If a student seems motivated when performing a search, it is important to consider where that motivation comes from: If a person seems enthusiastic or very directed in his or her search is it because of the search program, the assignment, personal interest, any combination of the three, or something else entirely? The same should be asked of a person showing a low level of motivation (lack of enthusiasm, laziness, no incentive).

By observing students while they are searching and asking them questions about their

current task, it is possible to determine where their motivation is coming from and then decide which components of the information gathered is relevant to the use of the CD-ROM or online database.

Survey

“Survey research is characterized by the selection of random samples from large and small populations to obtain empirical knowledge of a contemporary nature. The purpose of the research is to obtain valid and reliable information so that specific hypotheses can be tested or research questions answered” (Busha & Harter, 1980, p. 54).

An effective way to determine what high school students like and dislike about CD-ROM and online bibliographic databases is to administer a survey which asks students to identify specifics about their personal database use. It is an excellent way to obtain a large amount of data that can be compared and contrasted to develop the criteria relevant to this study.

Observation

Observation is an important method used for gathering data in this thesis.

“Observation is the direct surveillance and recording of dimensions of a phenomenon that is to be measured or evaluated. This close perception of a phenomenon facilitates a detailed and exact explanation of how the phenomenon behaves under known conditions. The information that is gained can then be applied to more general propositions and theories” (Busha & Harter, 1980, p. 12).

By observing students who are using CD-ROM and online databases, it is possible to determine their search habits and if the software they are using is compatible to their needs. The information that is gathered will then be applied to the development of a set criterion for educators to use when choosing software. It is important to put the students’ software needs first because they are the primary users.

Chapter Three

Methodology

Introduction

In this study it was determined that survey and observation were the most effective methods of accurately obtaining student opinions of the databases that they used in the library and writing lab. Earl Babbie, a prominent social scientist says of the survey method, “Survey research can be used profitably in the examination of many social topics and can be especially effective when combined with other methods” (Babbie, 1973, p. 45). More recently, the combination of research methods was employed in a study done by Mary P. Mauldin, an educational software researcher/designer. She and her design team wanted to find out what middle school students liked best about computer programs. “The design team decided to employ two methods in order to obtain this information: go directly to the students and ask their opinions, then involve as many students as possible in the formative evaluation process” (1996, p. 90).

Survey Design

In order to collect information on student opinion and student use of online or CD-ROM bibliographic databases in the Woodstown High School library in Woodstown, NJ, a survey was designed that encompassed various factors in using those databases. Those factors included reasons for use, ability to use databases effectively, and student opinions concerning the databases themselves. The content of the survey reflected questions raised by the researcher based on concern about whether or not the current databases in the Woodstown High School library were of interest or value to the students. The survey method was chosen because it was determined to be the most reliable way to measure students’ opinions about the many specific characteristics related to databases.

Procedures

A sample of approximately 85 high school students (4 classes, grade 11) was chosen to complete the survey. This sample was chosen because it contains students who are motivated and responsible enough to complete the survey honestly and carefully. It was also chosen because it was important to have all students in the study working on the same assignment. Results tended toward a higher degree of validity because all the students in the sample used the databases for the same reason, and they were all members of college-bound English classes taught by the same instructor. Each student was given a research assignment in English class that necessitated the use of one or more of the bibliographic online and CD-ROM databases provided in the Woodstown library. For the project, each student chose a moral, social, or political issue that presents concern in America today. The end product of the assignment was a debate scheduled for the end of the marking period in which the student had to defend his or her position on the chosen issue. There were four people assigned to a topic, two arguing each side of the issue. Students had to work together during their research. They were to utilize all the databases offered by the Woodstown High School Library (Patron Catalog, InfoTrac, Researcher, SearchBank), the World Wide Web, and other outside sources including public libraries and university libraries. This study was limited to one school, and any conclusions or recommendations made by the researcher refer to only students and educators of Woodstown High School.

The survey was administered to the individual classes in the writing lab on the second floor of the school on the second day of a three-day research session. All computers in the lab were connected to the library databases and provided access to the Internet. Students searched their topic for the first 35 minutes of the period before completing the survey. The researcher stated the purpose of the survey and clarified any questions before the students began. The researcher was also available during the survey in case any questions arose. If the results identified any discrepancies (obvious differences in opinion among participants) with any particular questions, the researcher intended to go back and clarify those discrepancies using additional questions designed in an open-ended, interview format. This was not necessary because there were no obvious discrepancies in answers. Refer to Chapter 4 to review the summary of survey results.

While the students conducted the research on their topics during the first part of the class period, the researcher acted as lab monitor, assisting students with any questions or difficulties they had while searching. The researcher took notes that described the behaviors that seemed to indicate attitudes of the classes as well as any problem areas students encountered during the searching process. These results are reported in Chapter 4 in conjunction with the survey results. The purpose is to assist in explaining results. It is thought by the researcher that survey data alone is not enough to determine student opinion of the databases. Different levels of motivation and comprehension, for instance, may influence results of the survey.

The survey consisted of one sheet of paper, front and back, accompanied by a cover letter explaining its purpose. Prior to the day the survey was distributed, students were given a letter to take home to their parents or guardians that requested permission for their son or daughter to take part in the study. Students had two weeks to return the letters, signed by their parents or guardians. Many were returned, but during the two-week time period the researcher received exemption from the Institutional Review Board and did not need to wait for the remainder of letters to include all students in the study (see Appendix A).

Questions 1 & 2 pertained to the frequency of use of the online and CD-ROM bibliographic databases in the library. Question 3 attempted to clarify where the difficulties (if any) are concerning overall use of the databases. Questions 4 - 7 identified the most and least used of the 4 databases in the library. Question 8 pertained to types of preprogrammed searching methods used by students. Questions 9 - 10 attempted to gauge how important it is for a database to provide full-text articles and if that feature had an affect on the frequency of use of each database. Questions 11 - 13 were designed to determine if there was a significant difference in the interface and use of each database and if that was a factor in the level of effort required when moving from program to program. Question 14 asked students to indicate whether or not they have a personal computer at home. Question 15 was a request for each student's grade level. Later, when it was determined that all the classes to be surveyed were of the same grade level, Question 15 was not factored into a comparison of results. See Chapter 5 and Appendix B.

These questions were designed to elicit information rarely gathered from high school students. The literature search (see Chapter 2) produced many articles discussing the evaluation of CD-ROM products such as games, encyclopedias and atlases (Richards, 1993; CIVC, 1995) and even produced an article that discussed what students want from those programs (Mauldin, 1996). The researcher, however, could find no articles about bibliographic databases and students' opinions of them. The survey questions were based on information derived from the articles on software evaluation as well as the researcher's own questions based on familiarity with the databases that are the subject of the survey. It is hoped that the results of the survey will aid educators in choosing any bibliographic database, not just the brands available to the survey subjects of this project.

A copy of the survey was critiqued by advisor Dr. Holly G. Willett and Woodstown High School librarian, Mr. Tom Foster and corrections were made where appropriate. After the completion of the survey, the results were tabulated and reported in Chapter 4.

Chapter 4

Survey Results

The survey results presented in this chapter represent a total of 85 surveys answered. Eighty-five paper copies were distributed to 85 11th grade students and 100% were completed and returned. However, Questions 7-15 are based on only 82 instruments because 3 respondents did not complete both sides of the survey. Occasionally, students chose to not answer some questions. This is indicated wherever it occurred.

Results for each of the fifteen questions included in the survey are shown below. Results for all the questions were simple to tabulate.

Survey: Students' Opinions of Bibliographic Search Databases

Respondents were asked if they used the library databases fewer than 5 times a month, 5 - 10 times a month, or more than 10 times a month.

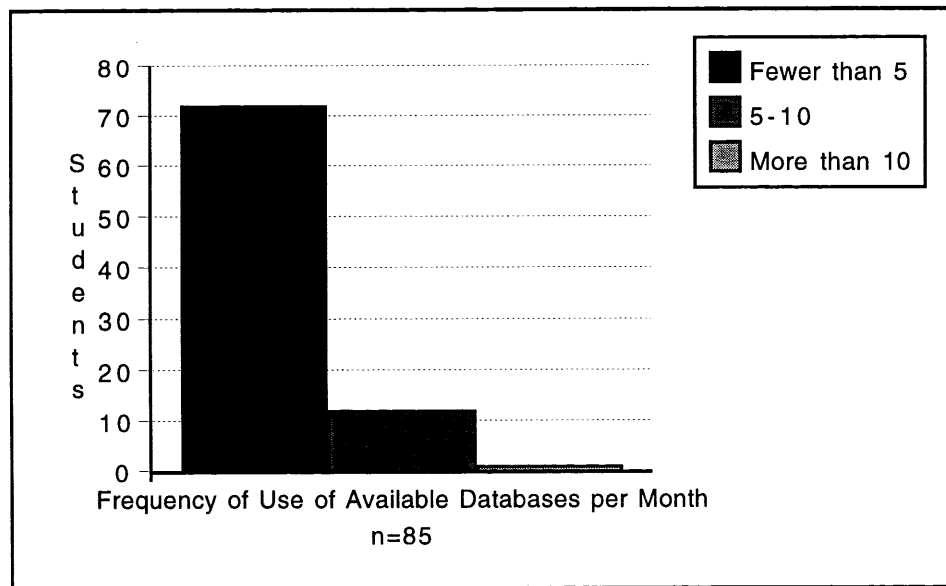


Figure 1. Frequency of use of available databases per month for fewer than 5 times (n = 72), 5 - 10 times (n = 12), and more than 10 times (n = 1).

Respondents were to choose one. Results to this question were put into 3 categories and all answers added up to 85, the total number of instruments. Results were very simple. The results (Figure 1) show that one person (1.2%) used the databases more than 10 times a month, 12 people (14.1%) used them 5-10 times a month, and 72 people (84.7%) used the databases fewer than five times a month. Figure 1 depicts that the majority of students surveyed believed they used the databases fewer than five times a month. See Figure 1.

Respondents were asked if they used the databases for teacher assignments, personal needs, or for other reasons.

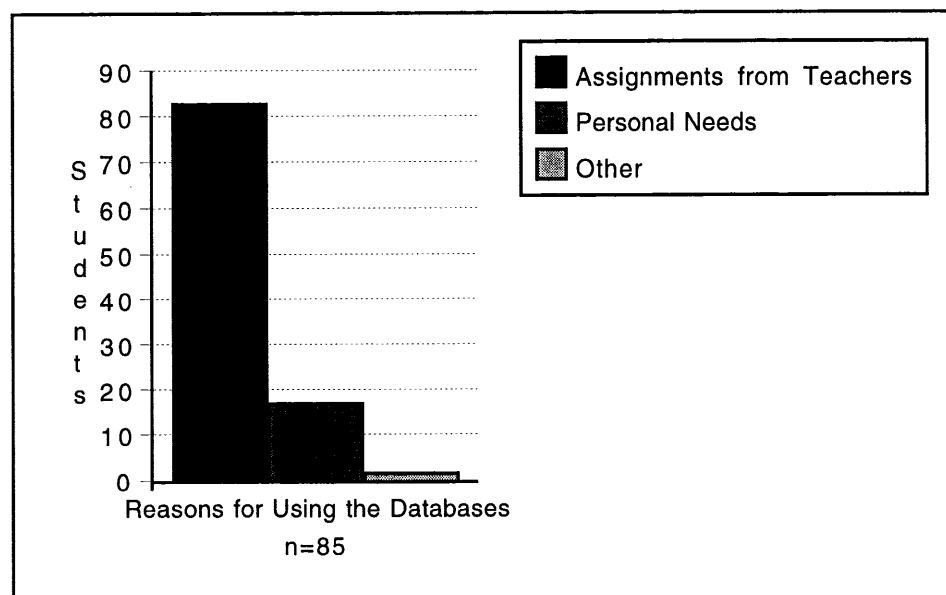


Figure 2. Number of students using the databases for assignments for teachers (n = 83), personal needs (n = 17), and other (n = 2).

Students were encouraged to choose as many responses as they felt necessary. The number of responses (102) exceeds the number of instruments returned because students could select more than one answer. Eighty-three students, representing 97.6% of responses, believed that they mainly used the databases to search for information for school assignments. Seventeen students (20%) said that they also use the databases to search for personal information. It is important to note that those 17 students also checked the first response (teacher assignments) as a main reason for using the databases. Two students chose “Other” as a reason for using the database. Both students reported having to

research topics for segments for the morning televised announcements at the school. See Figure 2.

Respondents were asked if, when they moved through the databases, they had difficulty with navigation, screen display, on-screen directions, time spent searching, performing a search, quality of results, changing databases, printing, downloading, other, or if they had no problems.

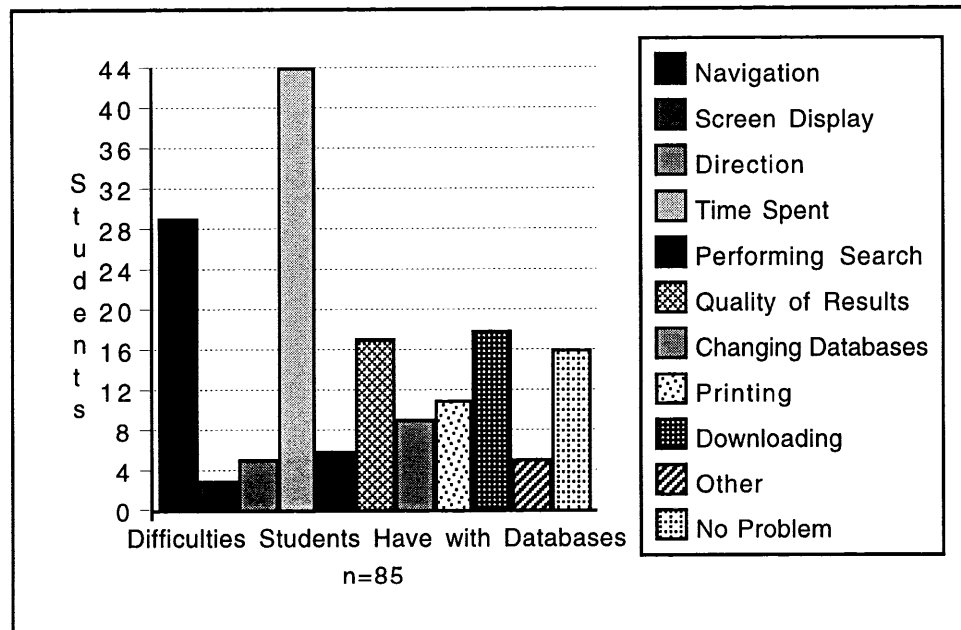


Figure 3. Difficulties students had when moving through databases with navigation (n = 29), screen display (n = 3), direction (n = 5), time spent searching (n = 44), performing a search (n = 6), quality of results (n = 17), changing databases (n = 9), printing (n = 11), downloading (n = 18), other (n = 5), and students who had no problems (n = 16).

Again, students were encouraged to choose as many as applied to their situation. This question received a total of 163 responses given by 85 students. Forty-four (51.8%) of respondents thought that they had difficulty with “Time Spent Searching”. This indicated the largest number of responses. Twenty-nine or 34.1% of students comprised the second largest number of responses, choosing “Navigation” as a difficult aspect when moving around the databases. At this point, the number of responses for each aspect drops considerably. Those aspects coming in third, fourth, and fifth are very close in number,

varying only by one digit. Downloading”, received 18 or 21.2% of responses, “Quality of Results” received 17 or 20% of responses, and “No Problem” received 16 or 18.8% of responses. The number of students who chose “Downloading” was larger than expected. Only one database, SearchBank, requires downloading. It will be shown in a later question that students did not often use SearchBank. “Printing” was chosen by 11 students (12.9%), “Moving from one database to another” was chosen by 9 students or 10.6%, and “Performing an Actual Search” received 6 responses (7.1%). “Search Directions” and “Other” tied, each receiving 5 responses (5.9%) and “Screen Display” was chosen by the fewest amount of students (3 or 3.5%). Overall, 69 or 82% of respondents found at least one aspect of using the databases difficult. Among those 69, the answer varied greatly, every aspect being chosen at least 3 times. Those who chose “Other” stated difficulties all related to computer errors such as not enough memory or a slow network . Sixteen students (18.8%) responded “No Problems” and did not indicate any other marks on this question. See Figure 3.

Respondents were asked to choose which databases they used least often; Patron Catalog, Researcher, InfoTrac, or SearchBank.

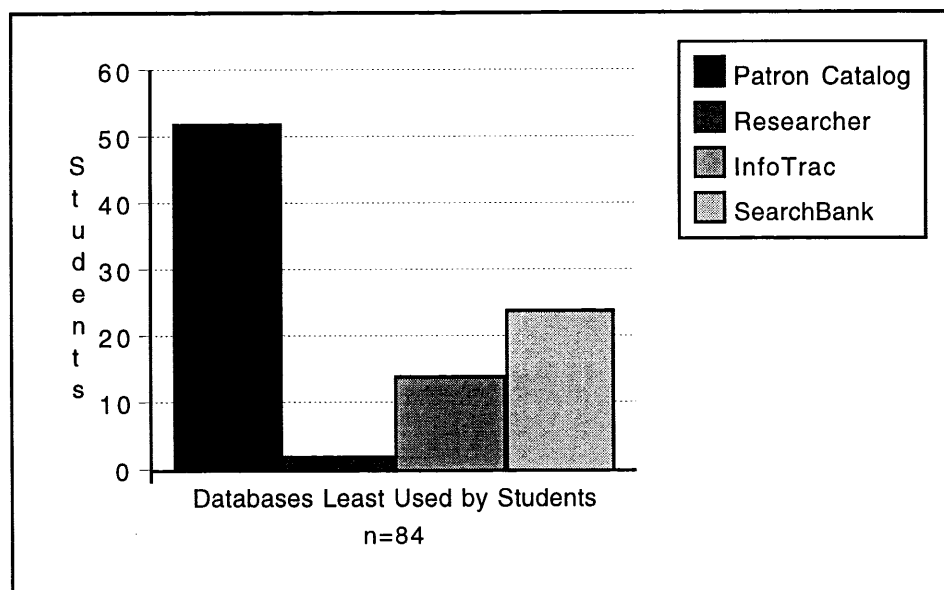


Figure 4. Least-used databases response for Patron Catalog (n = 52), Researcher (n = 2), InfoTrac (n = 14), SearchBank (n = 24), and no answer (n = 1).

Students were asked to choose as many as applied. Eighty-five surveys produced 93

responses. Eighty-four students answered this question. One student did not answer. The least used database was “Patron Catalog” and was chosen by 52 out of 84 students or 61.9%. “SearchBank” came in second, but the number of students who chose this database was less than half of those who chose “Patron Catalog”. Twenty-four respondents chose “SearchBank” or 28.6%. “InfoTrac” was chosen by 14 out of the 84 respondents (16.7%) and 2 out of 84 students (2.4%) chose “Researcher”.

Students were asked to indicate why they do not use the databases they chose in Question 4. Choices were: information is not useful, the databases are confusing or difficult to use, they are not familiar with the database, or other reasons. See Figure 4.

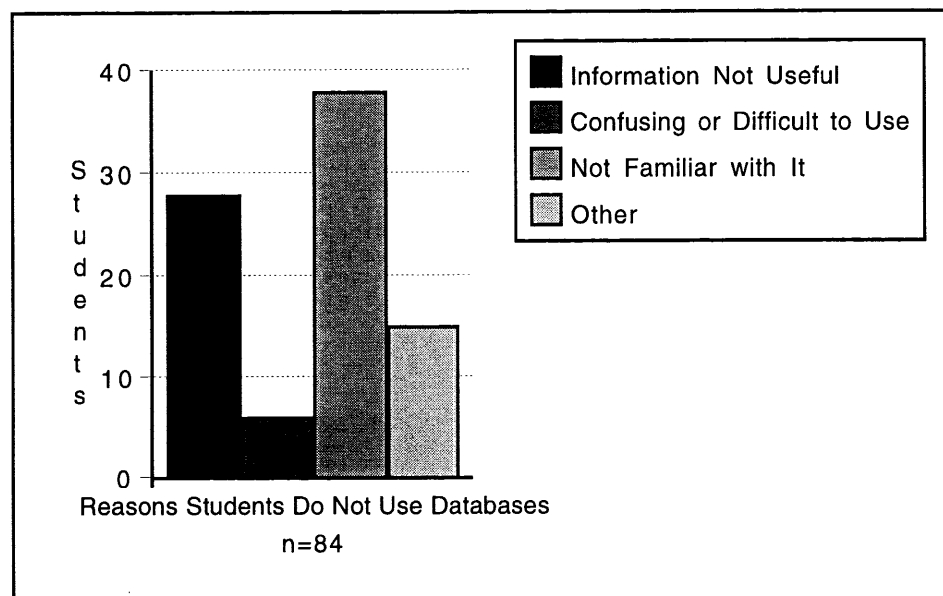


Figure 5. Students do not use databases for the following reasons: The information is not useful (n = 28); The databases are confusing or difficult to use (n = 6); They are not familiar with the databases (n = 38); Other (n = 15).

Students were asked to choose as many as applied. This question produced 88 answers given by 84 students. One student did not answer. The largest group of students (38 or 45.2%) felt that they did not use the databases they chose in Question 4 because they were not familiar with them. Twenty-eight (33.3%) do not use the databases they chose in Question 4 because those databases do not offer the kind of information that students need. Six students (7.1%) chose “Confusing or difficult to use”. Fifteen respondents (17.9%)

chose “Other”. Reasons that were given for “Other” included lack of speed of databases (4), lack of library resources (5), rather use Internet (3), use all other databases (2), and rather search at home (1). See Figure 5.

Respondents were asked to choose which databases they use the most - Patron Catalog, Researcher, InfoTrac, or SearchBank.

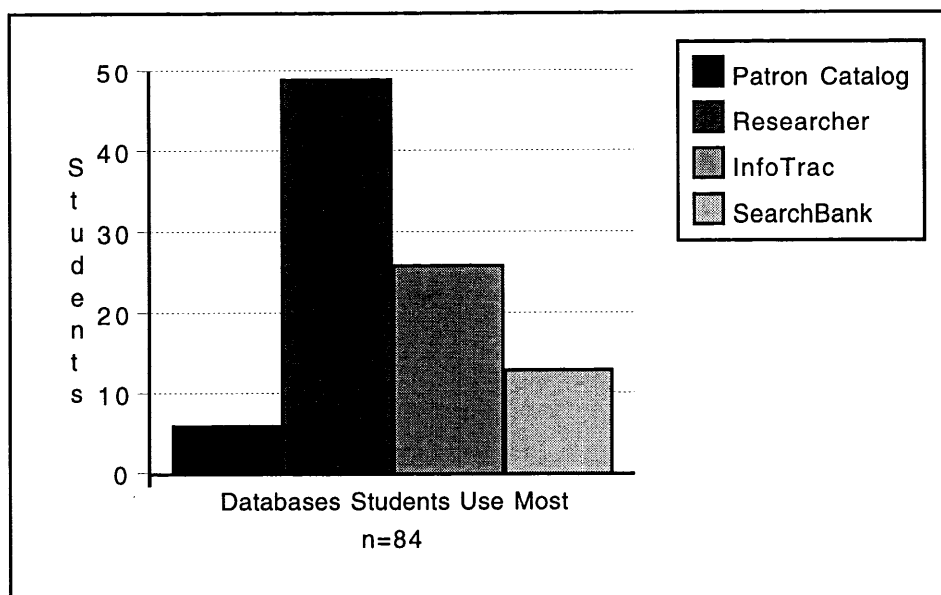


Figure 6. Most-used databases response for Patron Catalog (n = 6), Researcher (n = 49), InfoTrac (n = 26), and SearchBank (n = 13).

Students were asked to choose as many as applied. The number of answers totaled 94. Eighty-four students answered. One student did not answer. The majority of students, 49 out of 84 (58.3%) used “Researcher” the most. The second most used database, InfoTrac, was the response of 26 out of 84 (31%) respondents. “SearchBank” was chosen by 13 out of 84 (15.5%) students. The least used database appears to be “Patron Catalog”, which was chosen by 6 out of 84 people (7.1%). See Figure 6.

Students were asked to indicate why they used the databases. Their choices were: The majority of information is useful; They received quality results; The databases were easy to use; Students could search quickly; Other. See Figure 7 on the following page.

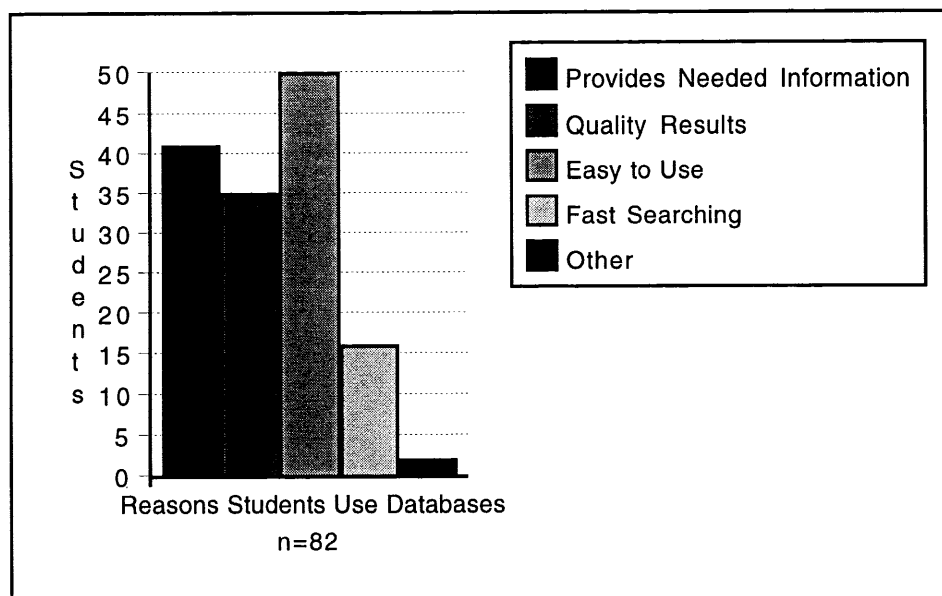


Figure 7. Students use databases for the following reasons: They provide needed information (n = 41); Databases provide quality results (n = 35); They are easy to use (n = 50); Searching is fast (n = 16); Other (n = 2).

Students were asked to choose as many as applied. Eighty-two students answered this question; the same three students did not answer. The number of answers totaled 144. Overall, responses did not vary greatly. The majority of respondents, 50 out of 82 (61%), chose “Easy to use” as their reason for using the database they chose in Question 6. Almost as many respondents chose “Provides needed information” (41 out of 82 or 50%). The number of respondents who chose “Quality Results” totaled 35 or 42.7%. “Fast Searching” only received 16 (19.5%) responses. “Other” was chosen by 2 students, who said they were familiar with a particular database and information was available in school. See Figure 7.

Respondents were asked if they prefer subject searching, keyword searching, or if it makes no difference what kind of searching technique is used. See Figure 8 on the following page.

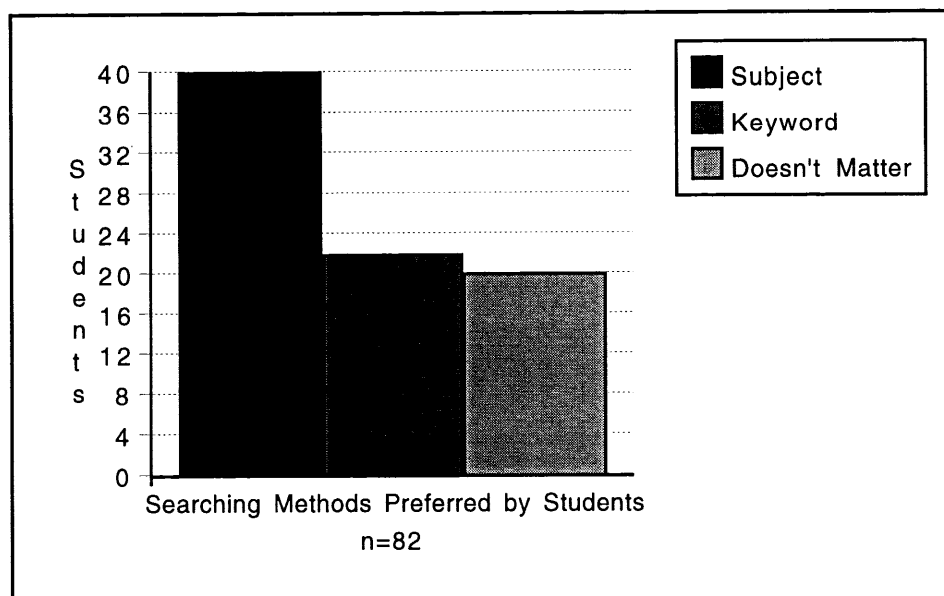


Figure 8. Searching methods that students prefer are subject ($n = 40$), keyword ($n = 22$), and doesn't matter ($n = 20$).

Out of eighty-five respondents, three did not answer. "Subject" was the preferred method of searching for forty (48.8%) students. Student's responses to "Keyword" and "Doesn't Matter" were almost equal, varying only by 2 numbers. "Keyword" received 22 responses (26.8%) and "Doesn't Matter" received 20 responses (24.4%).

Students were asked to indicate whether or not they prefer full-text articles. Eighty-two students answered. The majority of students, 77 out of 82 (93.9%), chose "Yes" as their answer to this question. Five (6.1%) chose "No".

Respondents were asked to indicate whether or not there were differences among the database search screens. Seventy-nine students answered. The majority of students, 50 out of 79 (63.3%), answered "No". Twenty-nine (36.7%) respondents answered "Yes". Three students skipped this question.

Respondents were asked if they found usable full-text articles most of the time, some of the time, or hardly ever. See Figure 9 on the following page.

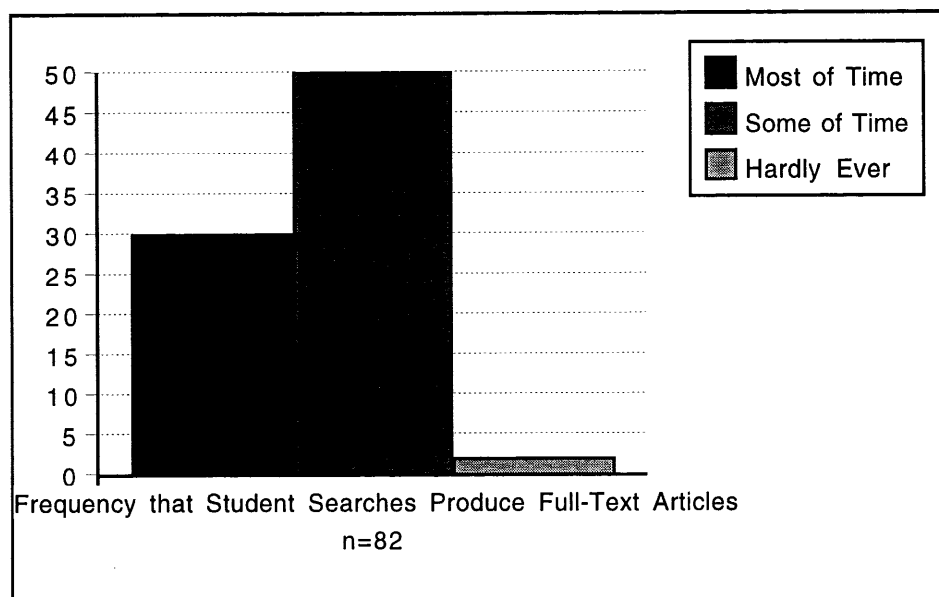


Figure 9. Frequency of usable, full-text articles is most of the time (n = 30), some of the time (n = 50), and hardly ever (n = 2).

Eighty-two students chose to respond. The majority of respondents (50 or 61%) chose “Some of the time”. This is not surprising because full-text articles are available for about 60% of the articles on the databases. Thirty out of 82 (36.6%) chose “Most of the time”. Only 2 respondents (2.4%) chose “Hardly ever” as a response.

Respondents were asked to indicate whether or not they felt the need to “switch gears” when moving from one database to another. Eighty-two students chose to respond, three students did not answer. The majority of students, 48 out of 82 (58.5%), answered “No”. Thirty-three (40.2%) respondents answered “Yes”. If respondents answered “Yes” they were then asked to describe the difficulty of “switching gears” from one database to another. Thirty-three responded to this question. This number represents all of the students who answered “Yes” in #12. Totals for this question are based on n=33. The majority of respondents chose “In Between” as their answer (20 out of 33 or 60.6%). “Easy” and “Difficult” received low response rates. Only 10 students (30.3%) chose “Easy” and 3 students (9.1%) chose “Difficult” as a response.

Respondents were asked to indicate whether or not they have a personal computer at home. Eighty-two students chose a response; three students did not answer. An

overwhelming majority of students have personal computers at home (74 out of 82 or 90.2%). Only 8 or 9.8% do not.

Respondents were asked to indicate their grade level. The survey allows students to choose from 3 grade levels but the sample consisted solely of 11th grade students. Eighty-two out of eighty-five students answered this question.

Observations

Prior to the distribution of the surveys, the researcher spent 35 minutes assisting students while they performed searches for their research topics. During that time, the researcher recorded her observations of students while they searched using the four databases specified in the survey. Much of the same behavior was observed among the classes. Most students knew how to use Researcher and did not seem to become frustrated or require any help with that database. The Patron Catalog did not receive any attention. Students used InfoTrac a great deal but seemed to become frustrated with its searching process and had to seek help. Most students were confused by SearchBank because many who tried it had never used it before. Once they were shown, students quickly caught on to the searching technique used by that database. The highest level of frustration the researcher saw was related to the use of the Internet. Many chose the World Wide Web as their first place to search, but once there they seemed anxious for it to work faster than it did. The students, despite their frustrations, seemed motivated to find the information that they needed. Almost all, with the exception of 2 or 3, were attentive and on task. The researcher encouraged several students to “talk through” a search they were performing. In every case (about two students per class), those students did not show hesitation in their search. They seemed competent when choosing queries related to their topics and were successful in navigating through the databases. In Chapter 5 a summary and conclusion of the survey and observation results will be made that will describe and attempt to interpret the data amassed in Chapter 4.

Chapter Five

Summary, Conclusions, Recommendations

The purpose of this project was to develop criteria that would assist educators in choosing online and CD-ROM databases for high school libraries. The data gathered in the study was instrumental in successfully determining what high school-aged students want from bibliographic databases available at a school. Most of the students used the databases fewer than five times per month (73 or 84.7%) and, at those times, they were most often searching for materials to aid them with school assignments (83 or 97.6%). It is important to point out that, even though the population studied is enrolled in college-preparatory classes, the students do not usually encounter more than one major research project at a time. During that period, teachers schedule their classes to come to the library or writing lab to search for material. It is unusual for there to be more than five class periods per month devoted to database research. Students also have access to the computers in the school library for approximately a half an hour before and after school every day but mostly do not use this time for research. In other words, the frequency of usage is due to a low level of access to the facilities that contain the databases and to a lack of need for the students to be there more than five times per month because there is not a heavy load of research assignments present at any time during the year.

The results of the survey, along with observations of students by the researcher, made it possible to determine those characteristics that students want most from the CD-ROM and online searching databases that they use in school. The following list states plainly and simply what those characteristics are. Each will then be individually explained in relation to the results of the survey:

Fast Searching

Easy Navigation

Quality of Results
Useful Information
Full-Text Articles
User-Friendly Search Screens

Fast Searching

In Question 3 of the survey (see Appendix C), students were asked to indicate the aspects that gave them difficulty when searching the databases. The largest number of students (44 or 51%) chose “Time Spent Searching”. There are three reasons why students might have chosen that response. If they used the Internet-based SearchBank, then searching may have been frequently slow because of the speed of the network. Sometimes a problem with a CD-ROM (Researcher, InfoTrac) can occur that causes the program to malfunction and therefore slow down the searching process. The CD-ROM or online databases may operate at a slow speed when they are working properly. Students want almost instantaneous results to their queries. They do not want to stare at the screen for more than a few seconds waiting for their answers.

Easy Navigation

The second highest number of students chose “Navigation” (Question 3) as something that gives them difficulty (29 or 34.1%). There are two main reasons why students would choose that. It is possible that a student is not familiar with the database. In Question 5 the largest number of students (38 or 45.2%) indicated that the main reason why they do not use a specific database is because they are not familiar with it. On the day the survey was given, students were encouraged to use all the available databases and might very well have encountered at least one they were not used to using. The second reason is the databases, despite receiving a lot of use, may be complicated to move through or “navigate”. In Question 7, 50 or 61% indicated that they use a particular database because it was “easy to use”. In Question 6, the second largest number of students indicated that they use InfoTrac to search for material (26 or 31%). During observations of each class while students were using the databases, it was determined that students had the most trouble with InfoTrac (Chapter 4, p. 23). Students asked many questions about how to make sense of the results that they received. It was difficult for them to differentiate between topics and subtopics.

They also had difficulty choosing which article titles were most relevant to their topics. It was later confirmed by the librarian, Mr. Tom Foster, that students frequently became confused by InfoTrac and asked questions about how to move through the database and how to interpret the results to a query despite receiving instruction each year on how to use that database and others.

Quality of Results / Useful Information

The next two characteristics, “Quality of Results” and “Useful Information” were somewhat interchangeable. In Question 7 the second largest number of students (41 or 50%) indicated that they use specific databases (see Question 6) because they “provide needed information”. A slightly lower number (35 or 42.7%) indicated that they use specific databases because of “quality of results”. All the students who chose “Quality of Results” in Question 7 also chose “Provides Needed Information”. In other words, for 35 students, the two reasons for use went hand in hand. Students seemed to find any information that is useful to them to also be information that is high in quality.

Full-Text Articles

The presence of full-text articles is what almost all surveyed students wanted from a bibliographic database. In Question 10 of the survey students were asked whether or not they preferred full-text articles. The majority of students (77 or 93.9%) answered “Yes” to this question. Researcher, the most popular database among students (Question 6), contains only full-text articles. It does not contain any article abstracts like InfoTrac and SearchBank, which are only partial full-text databases. This may be one reason why Researcher was so popular. In Question 9, respondents were asked if they found usable, full-text articles most of the time, some of the time, or hardly ever. All the students who chose “Most of the Time” (30 or 36.6%) chose Researcher as the database that they use the most in Question 6. In other words, students don’t want to spend time looking for articles from a list of citations. A common sense notion of humanity would indicate that it was much more convenient if each article was automatically laid out before them in full-text form.

User-Friendly Search Screens

The last of the criteria, “User-Friendly Search Screens” was developed after analyzing the results of Questions 11 and 12. They had to do with the appearance of the database search screens. Most of the students indicated that there was no difference in appearance among the search screens (50 or 63.3%). In reality there was a definite difference in appearance among all the search screens because they are all different products designed by different companies. The researcher asked four to five students in each class to verbally clarify their answers to Question 11. Those students all believed that there was no difference because all the databases offered an introductory screen in which the user is prompted to choose a searching method and type in his or her particular query. They did not answer based on visual appearance but on the basic content of the search screen. Students also indicated that having familiar-looking search screens among the different databases made using the databases a lot easier because they already had an idea of how those databases work. This indicated familiarity with basic elements of the databases such as initiating a query and applying the search command. Question 12 asked students if they felt the need to “switch gears” when moving from database to database. All forty-eight students (58.5%) who chose “No” as their answer were among the fifty (63.3%) who chose “No” for Question 11.

Additional Results

The results of the survey also aided in drawing conclusions in several other areas related to online and CD-ROM databases. For Question 8, students were asked to indicate the type of searching method they prefer. The majority of students chose “Subject” (40 or 48.8%). The reason for this is most likely due to a greater level of success with this type of searching method as well as influence from teachers. When students receive instruction on the use of the databases they are encouraged to use subject searching as their main searching method. Keyword searching is discouraged unless students are looking for material on a very specific or narrow topic because subject searching tended to yield more relevant results. The particular research project that students were working on when the study was conducted required students to search general social topics.

Question 13 asked those students who indicated in Question 12 that they felt the need to

“switch gears” when moving from database to database to identify the degree in which they had to make the transition. The majority of the thirty-three students who answered this question (20 or 60.6%) believed that the effort required to move among the databases was “easy”. Most students do not find the difference among database search screens to be a problem when using them. Question 14 asked students to indicate whether or not they have a personal computer at home. Most of the students have one at home (74 or 90.2%). However, there was no apparent relationship between the results of the survey and those who have a computer and those who do not. The researcher chose not to include those conclusions as part of the list of criteria for choosing databases because it was not possible to narrow those results down into usable criteria however valuable the information may or may not be.

It was not realized until after the results were tabulated that the results of some questions did not lend themselves to the creation of criteria to be used to choose databases. This was a limitation of the survey. Looking back, after the completion of the study, there are certain aspects of the survey that might have been changed or clarified to make it more valid, such as terminology that the respondents might not have been very familiar with, but the results still effectively communicated students’ opinions about the databases that they use in school.

The use of online and CD-ROM bibliographic databases as a research tool is increasing every day. The results of this study may seem predictable, but if educators in Woodstown High School always use them as a guide in making decisions about which databases to choose, then they can be certain that those decisions are made in the best interest of the students, the primary users of the databases. The results of this study also produced some of the same results as the study done by Mary P. Mauldin (see Chapter 2) in that she and her fellow researchers found that students want “clear directions and easy access in and out of programs”.

In the future this study could be duplicated on a much larger scale. It would be interesting to see how high school students at many schools would answer the survey questions. The criteria that are developed could be used on a much larger scale, such as on a regional or state level. It would also be interesting to address additional factors such as

accuracy, currency, and readability of search results by having students look specifically at those articles that they feel are appropriate for their current assignment. In some cases this may cause students to reconsider the usefulness of what they have found. This could lead to the idea that more skills are needed on the part of the students when searching. In other words, the student may need more than a procedural knowledge of how to perform a search. Students may need instruction on how to determine the quality and relevancy of what they find. That is a skill that relates to more than just database searching.

Every school needs guidelines to follow when choosing educational materials. In a school library those guidelines are included in a selection policy. The same rules that apply to the choosing of books should also apply to the choosing of computer-based products. Criteria specific to those products would only enhance the quality and effectiveness of any and all educational tools that are chosen.

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Appendix A
Parent Permission Letter

Dear Parents:

I am a graduate student in the Library Education Department at Rowan University of New Jersey. I will be conducting a research project as part of my Master's Thesis concerning how students use the various online and CD-ROM databases at the Woodstown High School Library under the supervision of Mr. Tom Foster. I am requesting permission for your son or daughter to participate in this research. The goal of the study is to establish criteria that will assist educators in choosing software products for a school environment based on student opinions about the software that they are currently using.

Each student will be asked to complete a survey that asks them about the various programs available to them in the library for research purposes. The survey will be conducted while the student is at the terminal and is using it as a research tool. Any student who does not wish to participate may do so at his or her own discretion. All data gathered will be reported in terms of group results, individual results will not be reported.

Your decision whether or not to allow your son or daughter to participate in this study will have absolutely no effect on his or her academic standing. At the conclusion of this study, a summary of the group results will be made available to all interested parents. If you have any questions or concerns please contact me at (609) 256-4710 or you may contact Mr. Tom Foster at (609) 769-0144 ext. 228 or Dr. Holly Willett (Director of Library Education at Rowan University) at (609) 256-4759. Thank you.

Sincerely,

Darlene Michel

Please indicate whether or not you wish to have your son or daughter participate in this study by checking the appropriate statement below and returning this letter to Mr. Foster by February 18, 1998.

_____ I grant permission for my son/daughter _____ to participate in this study.

_____ I do not grant permission for my son/daughter _____ to participate in the study.

(Parent/Guardian Signature)

(Date)

Appendix B
Survey Cover Letter and Survey



TO: Survey Participants
FROM: Darlene Michel, Principle Investigator
RE: Database Survey

I am a graduate student in the Library Education Department at Rowan University of NJ. I am conducting a research project as part of my Master's thesis concerning how students use the various online and CD-ROM databases at the Woodstown H.S. library under the supervision of Mr. Tom Foster. The goal of the study is to establish criteria that will assist educators in choosing software products for a school environment based on student opinions about the software that they are currently using.

All participation in the survey is voluntary. All responses will be kept anonymous and confidential. Participants need not respond to all questions. Class standing will not be affected in any way based on participation. If there are any questions, please contact Darlene Michel, principal investigator at 256-4710 or Dr. Holly Willett, Faculty Advisor at 256-4759.

Thank you,

Darlene Michel

Appendix C

Student Survey: Database Use

1. How often do you use the computerized search databases (Researcher, InfoTrac, SearchBank, Patron Catalog) in the library?

- ☐ More than 10 times a month.
- ☐ 5 - 10 times a month.
- ☐ Fewer than 5 times a month.

2. What do you use the databases for? (choose as many as apply)

- ☐ To search for information for assignments given by teachers
- ☐ To search for information for personal needs (not an assignment)
- ☐ Other, Please explain _____

3. When moving through the databases, which of the following aspects have given you any difficulties? (Check as many as apply)

- ☐ Navigation (finding your way around)
- ☐ Screen display
- ☐ On-screen directions for conducting a search
- ☐ Time spent searching
- ☐ Performing an actual search
- ☐ Quality of search results
- ☐ Moving from one database to another
- ☐ Printing
- ☐ Downloading
- ☐ Other, Please Explain _____
- ☐ I have never had a problem with any database

4. Out of the four databases offered in your library, which one(s) do you use the least?

- ☐ Patron Catalog (for looking up material in Woodstown H.S. library)
- ☐ Researcher (full-text articles on social issues)
- ☐ InfoTrac (periodical and newspaper articles/partial and full-text)
- ☐ SearchBank (access over Internet/partial and full-text articles)

5. Why do you use the one(s) you chose in #4 less often than the others?

☐ Does not offer kind of information you are looking for

☐ It is confusing or difficult to use

☐ Not familiar with it

☐ Other, Please explain _____

6. Out of the four databases in your library, which one(s) do you use most?

☐ Patron Catalog

☐ Researcher

☐ InfoTrac

☐ SearchBank

7. Why do you use the one(s) you chose in #6 more often than the others?

☐ Almost always provides the information that you need

☐ Quality search results

☐ Easy to use

☐ Fast searching

☐ Other, Please explain _____

8. Which kind of searching do you prefer?

☐ Subject (search using the list of subject headings provided by the database)

☐ Keyword (search for articles containing words that you choose)

☐ Doesn't matter

9. How often does your searching bring you to full-text (whole) articles that you can use?

☐ Most of the time

☐ Some of the time

☐ Hardly ever

10. Do you prefer to use a database that has full-text (whole) articles?

☐ Yes

☐ No

11. Is there a significant difference in the appearance of the database search screens?

☐ Yes

☐ No

12. When moving from database to database, do you feel that you have to make an effort to "switch gears" to adapt to the different search styles of each program?

☐ Yes

☐ No

13. If yes, describe the effort.

_____Difficult _____Easy _____In between

14. Do you have a personal computer at home?

_____Yes

_____No

15. What grade are you in?

_____10th grade _____11th grade _____12th grade

Appendix D

Online and CD-ROM Databases Used in the Study

COMPanion: 1989--Patron catalog (Version 3.77) [Database]. (1997). Salt Lake City, UT: Alexandria Professional MV [Producer and Distributor].

An integrated library system containing all modules necessary to run a school library.

InfoTrac: 1994--SuperTOM+ with back file (Version 3.20) [Database]. (1997). Foster City, CA: Information Access Company [Producer and Distributor].

One-hundred eighty magazines, general periodical indexing, and partial full-text database covering 1989 - 1997.

SearchBank: 1995--General reference center [Online Database]. (1998). Foster City, CA: Information Access Company [Producer and Distributor].

Indexes three hundred magazines, partial full-text covering 1993 - 1998.

SIRS: 1988--Researcher (Version 6) [Database]. (1998). Boca Raton, FL: Social Issues Resource Series [Producer and Distributor].

Complete full-text social and scientific issues database containing articles submitted by many authors.