



# Research Notes

## Database Selection by Patrons Using CD-ROM

Gillian Allen

*A variety of bibliographic databases on CD-ROM are now available. This study examined the appropriateness (as determined by three independent judges) of database selection by patrons, when a choice of databases was provided. It was found that one patron in five used the most appropriate database available, while one patron in five used an entirely inappropriate database. Patrons followed the same search procedure if they were using an appropriate database or not. Experience in searching also had no effect on database selection. Patrons using appropriate or inappropriate databases had similar opinions about their need for training and about how successful their searches were.*

Academic libraries are increasingly adopting bibliographic databases on CD-ROM. While libraries at one time acquired one system, some libraries are now purchasing a number of different CD-ROM systems. Previous research has shown that patrons like to use CD-ROM and believe that they require little training to use these databases.<sup>1</sup> To a great extent, these studies of CD-ROM involved surveys of

patrons using *Info Trac*.<sup>2</sup> But little research has been done to date in libraries which offer patrons a choice of bibliographic databases on CD-ROM. There has been no published study on the appropriateness of the databases selected by patrons when a variety of databases is provided. The purpose of this study was to examine the database selection by patrons at the Undergraduate Library of the University of Illinois at Urbana-Champaign (UIUC), and to determine the appropriateness of that database selection in searching specific topics.

### BACKGROUND

Few of the studies of CD-ROM have compared the use of a variety of CD-ROM databases. Jane Kleiner compared the use of *Info Trac*, *Legal Trac* and *Government Publications Index* on CD-ROM.<sup>3</sup> In that study, 77 percent of the patrons searched the *Info Trac* database, although the majority of users realized that other databases were available. Eighty-six percent of those surveyed considered that they had retrieved

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adequate information from *Info Trac*.

Karla Pearce found that *PsycLIT* produced the largest proportion of satisfactory searches of the eight databases in her study.<sup>4</sup> Eighty-seven percent of the users surveyed felt that they had retrieved relevant citations.

However, in both of those studies, the appropriateness of database selection was not determined. Appropriateness, in this context, relates to the suitability of the database in terms of its subject content for use in searching a specific topic.

### METHODOLOGY

In August 1988, the Undergraduate Library at UIUC established a CD-ROM lab area, that has a number of workstations equipped with CD-ROM bibliographic database systems. There are two workstations equipped with *Info Trac* and *Readers' Guide* (Wilson), and a number of workstations equipped with other Wilson disc systems. Additional copies of some of these CD-ROM databases are available elsewhere in the University, and a few databases not held by the Undergraduate Library are held by other departmental libraries on campus.

This study examined the use by patrons of *Info Trac* and nine Wilson bibliographic databases on CD-ROM in the lab area. During the period of the study, eighty-two searches were observed. The database selected by each patron and the topic of each search were recorded. Three independent judges then selected the three most appropriate databases available to patrons for each of the search topics, and the choices of the patrons and judges were compared.

The Wilson disc systems included *Readers' Guide*, *Applied Science and Technology Index*, *Biological and Agricultural Index*, *MLA Bibliography*, *Business Periodicals Index*, *Humanities Index*, *Education Index*, *Art Index* and *the Index to Legal Periodicals*. The subject content of the databases in the Undergraduate Library CD-ROM lab ranges from general, such as *Info Trac* or *Readers' Guide*, to specialized, such as *Art Index* and *MLA Bibliography*.

In addition to these ten databases available in the CD-ROM lab of the Undergrad-

uate Library, six other databases that are available elsewhere in the library system were added to create a list of sixteen databases available to patrons for end-user searching. The six databases added were *ERIC*, *PsycLIT*, *Medline*, *ABI/Inform*, *Da-text*, and *PAIS*. Each of these databases is located in a departmental library in buildings that are adjacent to the Undergraduate Library. Undergraduates were able to go to the appropriate departmental library to use the database that was the most suitable for the subject of the search.

The three independent judges were experienced in using all of the CD-ROM databases available within the University. Also, to aid them in selecting the three most appropriate databases, each judge was provided with a list of the sixteen databases that are available to patrons within the University, and a description of the subject content of each of the databases. The independent judges were asked to select the three most suitable databases from the list provided for each of the searches included in the study. Judges were to name their first, second, and third choices of databases. These selections by the independent judges were then compared with the databases actually selected by the patrons for their searches.

If the database selected by the patron was the same database chosen as the most appropriate database for the search topic by an independent judge, the search was awarded three points. If the database selected by the patron was the database determined to be second best by an independent judge, the search was awarded two points. If the database selected by the patron was a judge's third choice, the search was awarded one point. This process was repeated for the three judges for each of the eighty-two search topics. The total score on each search would therefore range from zero points (complete disagreement between database selected by patron and databases selected as best, second best or third best by all independent judges) to nine points (complete agreement between patron and independent judges: database selected by patron was considered to be the most appropriate

database for the search by all three independent judges).

The number of cycles (that is, the time from initial input of a search statement to the input of another search statement or end of the search) through which each patron progressed during the search was also counted. A success was recorded when citations were considered valuable enough to be printed out. A failure was recorded when citations were not found or were not printed. The amount of time taken to perform each search was also recorded.

Patrons were asked a number of questions about their searches and their search results. They were asked which bibliographic databases they had used prior to their current search in order to determine if experience in searching had an effect on database selection. They were asked if they felt they had found some information on their search topics, and if they had successfully answered their research questions, to determine how positively they felt about their search results. The opinions of the patrons were also compared with the findings of the previous studies that reported patrons were generally satis-

fied with their search results (retrieved relevant citations<sup>5</sup> and adequate information<sup>6</sup>).

Patrons were also asked if they preferred using bibliographic databases on CD-ROM or comparable print reference tools. They were asked what they intended to do next in their research. Possible responses included: look up the citations found, go to another database on CD-ROM or to a print source, ask for help, or quit. It was expected that patrons using appropriate databases would be able to proceed with their research, but that patrons using inappropriate databases would have to look further for relevant citations before proceeding with their research.

### FINDINGS

The results from the study were analyzed using a statistical package (Mac SS). In conducting hypothesis tests, the level of acceptable Type 1 error was set at  $\alpha=0.05$ . Correlations were tested using Spearman's rank order correlation.

When database selection by patrons was compared with database selection by independent judges, the highest percentage

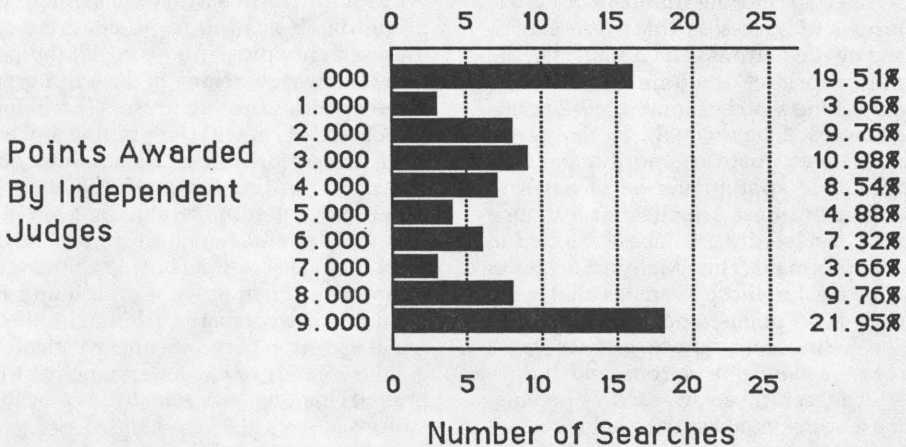


FIGURE 1  
Appropriateness of Database Selection

was for absolute agreement between patrons and judges. The highest possible score of 9 points was received in 21.95 percent of the eighty-two searches. The second highest percentage was for absolute disagreement between patrons and independent judges: 19.51 percent of the searches received the lowest possible score of 0 points.

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**"These findings seem to indicate that patrons may not know that they are working in an inappropriate database, and may continue with their searches as though they were retrieving useful citations."**

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There was no significant difference in the way patrons conducted their searches using appropriate or inappropriate databases. No significant correlations were found between appropriateness of database and the number of cycles completed in the searches, or the time taken to perform the searches. These findings seem to indicate that patrons may not know that they are working in an appropriate database, and may continue with their searches as though they were retrieving useful citations. Table 1 shows the relationship between appropriateness of database selected and the numbers of cycles, failures and successes that were experienced by the patrons. The numbers in the "Inappropriate" column contain the results of the searches in which 0-2 points were awarded, based on the level of agreement between patrons and independent judges as to appropriateness of database selection. In these searches, at least one judge considered the database selected to be inappropriate. The "Marginal" column results are for those searches that were awarded 3-6 points, and the "Appropriate" column contains those searches where agreement between patrons and judges was strongest: those awarded 7-9 points. In these searches, at least one judge considered the database selected to be the most appropriate.

Although ANOVA showed significant differences in the number of cycles

( $p < .04$ ) and in the number of failures ( $p < .01$ ), these significant differences appear to have been caused by the fact that a larger proportion of searches using *Info Trac* were in the "Marginal" group of cycles and failures. Seven out of the ten searches using *Info Trac* had results that were included in the "Marginal" group, and it was found that *Info Trac* searches required more cycles and produced more failures than Wilsondisc searches. The results using the Wilsondisc systems were more consistent and therefore more evenly spread out between the three classes of scores. In these searches, the number of cycles completed and the numbers of successes and failures achieved were similar regardless of the level of appropriateness of database selected. This confirms the findings of the correlation analysis that appropriateness of database did not affect search characteristics.

There was also no significant correlation between appropriateness of database selection and the number of failures or successes in the search cycles completed by the patrons. At first glance, this result implies that, because there was no apparent difference in the search process measured in cycles or in the proportion of successes or failures when using appropriate or inappropriate databases, it did not matter which database was used by the patrons. While some patrons who were in inappropriate databases found no citations on their search topics, (for example, the patron who was searching in *MLA Bibliography* for articles on "mattresses") and left the CD-ROM lab without printing any articles, the majority of patrons printed out citations from inappropriate databases. Given the scatter of literature in a variety of journals, and hence in a number of databases, it is not surprising that some hits worth pursuing were even found in inappropriate databases. Although subsequent use of citations was not investigated in this research, one wonders whether the printed citations were actually used by the patrons.

There was no significant correlation between appropriateness of database used and the number of databases that had been used previously. This implies that

patrons did not benefit from past searching experience in improving their database selection ability.

There was no significant correlation between appropriateness of database used and opinions of the patrons of the extent to which they found some information in their searches. However, there was a modest and nearly significant relationship between appropriateness of database selection and opinions of the patrons that they had been successful in answering their research questions ( $R = -.2063$ ,  $p < .06$ ).

There was a significant positive correlation ( $R = .2182$ ,  $p < .05$ ) between appropriateness of database selection and patron preference for using bibliographic databases on CD-ROM or print reference tools (Spearman's R Correlation). Patrons using appropriate databases expressed a stronger preference for using print reference tools. Although these patrons were using CD-ROM appropriately, they still demonstrated a preference for using the traditional reference tools.

There were no significant differences based on appropriateness of database selection in the subsequent activities of the patrons (Kruskal-Wallis ANOVA). The largest group of patrons (51.2%) went directly from searching to looking for the cited articles. Of these, 26.2% were using the most appropriate databases, and 14.3% were using totally inappropriate databases. It is reasonable to assume that the 26.2% of patrons using appropriate databases would have found useful citations to look up, and it seems reasonable to assume that the 14.3% of patrons in the wrong databases would not have found as useful citations.

The remaining patrons did not move from finding citations to looking up the citations, but they were going to ask for help, move to other reference tools, or quit. Of these patrons, 17.5% were using the most appropriate databases, and 25% were using totally inappropriate databases. It appears reasonable that the patrons using inappropriate databases would not continue with their searches, but it is difficult to understand why the 17.5% of patrons using appropriate data-

bases did not continue by looking up the citations found. They may have, for example, found unexpected citations, or may have been using the appropriate databases incorrectly and retrieving citations that were not useful. The motivations for the subsequent actions of the patrons were not investigated in this research.

There were significant differences in the degree of appropriateness of database selection attached to the bibliographic databases on CD-ROM that were used in each of the searches (Kruskal-Wallis ANOVA). Table 2 shows the average number of points awarded to the ten searches carried out in each of the seven databases. For example, the highest agreement between patrons and independent judges on appropriateness occurred with patrons using the *Biological and Agricultural Index* (appropriateness rating of 6.9 out of the possible 9 points). The average search carried out using the *Education Index* scored only 2 points (out of a possible 9 points) on appropriateness. The average score on appropriateness was 4.43 out of the potential 9 points.

The most appropriate databases to be used in searching were those databases that are specialized in their subject content, rather than general in content. The

TABLE 1  
SEARCH CHARACTERISTICS  
BY APPROPRIATENESS

	Inappropriate	Marginal	Appropriate
Cycles (avg.)	2.15	5.2	3.35
Failures (avg.)	1.07	3.77	1.79
Successes (avg.)	1.11	1.42	1.55

TABLE 2  
APPROPRIATENESS OF  
DATABASES SELECTED

Database	Avg. Points Awarded
<i>Biological &amp; Agricultural Index</i>	6.9
<i>Business Periodicals Index</i>	6.7
<i>Applied Science &amp; Technology Index</i>	6.4
<i>Avg. of all databases</i>	4.43
<i>Info Trac</i>	3.4
<i>Readers' Guide</i>	2.9
<i>Humanities Index</i>	2.7
<i>Education Index</i>	2.0

closest matches of opinions between patrons and independent judges were on the selection of the two specialized science databases and the business database. There was a low level of agreement on the appropriateness of the selection of both *Readers' Guide* and *Info Trac*, and the greatest difference of opinion was on the selection of the *Humanities* and *Education Indexes*. This could relate to the fact that both of these databases, as well as *Info Trac* and *Readers' Guide*, cover a wide range of subject content.

### IMPLICATIONS OF THE RESEARCH

The research provides information on the appropriateness of database selection by patrons using bibliographic databases on CD-ROM in the academic environment. Approximately 22 percent of the patrons selected a database that experts felt was entirely appropriate for the search being conducted. Nearly as many patrons selected a database that was not even considered to be one of the three most appropriate databases for the search topic. However, all patrons went through approximately the same search process, and there was no evidence of any results of inappropriate database selection during the search process. These findings raise some doubts about patron expectations from searching bibliographic databases on CD-ROM, as well as about their searching ability.

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**"Approximately 60 percent of the time, the independent judges were not unanimous in their selection of the most appropriate database to be used for searching a specific topic."**

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The results also show that there were considerable differences between databases. Those patrons using the more specialized databases received higher scores

than those patrons using the more general databases for appropriateness in their searches.

The research also shows that some patrons selected the most appropriate databases without any assistance or training in database selection. But other patrons did not make adequate use of the bibliographic databases on CD-ROM. Approximately 60 percent of the time, the independent judges were not unanimous in their selection of the most appropriate database to be used for searching a specific topic. It follows that more than one database could be appropriate for many searches. Yet only a few patrons moved from one bibliographic database on CD-ROM to another during their searches, in order to retrieve more relevant citations. It follows, then, that for approximately 80 percent of the patrons, some training or assistance in database selection would have been advantageous.

There are a number of areas where future research would be valuable. The value of training in improving the database selection ability of patrons could be assessed. Aspects of patron search behavior could be studied, for example, why they continue with searches and how they make use of printed citations. Effects of lab area layout on database selection could be studied. Despite the presence of signage in the lab area, many patrons did not realize there was a variety of bibliographic databases on CD-ROM from which to choose, and they may have used the most accessible database rather than the most appropriate database for their searches.

Librarians should be aware of the significant differences in database selection ability of their patrons, and of the desirability of providing training or assistance in database selection, in situations where patrons are offered a choice in the bibliographic databases on CD-ROM that could be used in their searches.

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by

■ Mary Jo Lynch  
Director, ALA Office for Research

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