

1-1-2003

The Effect of Bibliographic Instruction on the Demand for Reference Services

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Saunders, E. Stewart, "The Effect of Bibliographic Instruction on the Demand for Reference Services" (2003). *Libraries Research Publications*. Paper 22.

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Has bibliographic instruction had a positive or negative effect on the demand for reference services? Bibliographic instruction and reference services are both avenues for the teaching of library skills to library patrons. There is a certain logic to the proposition that students who have received classroom instruction in library skills will be more self-reliant and hence less prone to call on the services of a reference department. The purpose of this paper is to investigate this proposition through an analysis of data on bibliographic instruction and reference requests.

The "Think Tank" recommendations for bibliographic instruction, published in 1981, state, "Bibliographic instruction is intended to teach students to make intelligent, independent decisions about library use."(1) The inference is that a user is self-reliant. By definition a self-reliant user has less need of the services a reference librarian provides. The **Information Literacy Competency Standards for Higher Education** make a similar inference. Standard two states, "The information literate student accesses needed information effectively and efficiently."(2) The performance indicators which describe this standard depict a self-reliant user. Opposing this view, C. Paul Vincent believes that the 20th century library is far too complex to be mastered in a few sessions of bibliographic instruction. On the contrary, he thinks that instruction leads the user to understand his/her own shortcomings in using a library by creating an awareness of all the myriad possibilities that exist for information. It does not lead to a mastery of information sources. Thus instruction should lead to a greater demand on reference

services.(3) Vincent supports his belief with data from Franklin and Marshall College, which recorded an increase in the number of reference questions as sessions of bibliographic instruction increased.(4)

Data and Methodology

This article looks at data for 83 academic ARL (Association of Research Libraries) libraries from 1995 to 2000. The source of the data is **ARL Statistics** and **ARL Supplementary Statistics** for the years 1994/95 to 1999/2000.(5) The data extracted included (1) the number of reference transactions, (2) the number of students receiving bibliographic instruction in group sessions, (3) the size of the faculty, (4) the size of the student body, (5) the number of service points, and (6) the hours of weekly service. Since the data came from six consecutive years, the year of the data was also available as a data item. All academic libraries which had complete data for these variables for all years were included in the analysis. Eighty three libraries had complete data for all six years, yielding a total of 498 observations.

To test the effect of bibliographic instruction on the demand for reference services, a regression equation was formulated. It defines the number of reference questions received as the dependent variable and the number of students receiving bibliographic instruction as the independent variable. Other variables which might effect the number of reference questions were added to the equation as independent variables. These are: the size of the user population (number of students plus number of faculty), the number of service points, the hours of service, and the year of the data. It is desirable to include

these other variables in the equation in order that effects coming from these causes are not erroneously attributed to bibliographic instruction. All of the independent variables except "year of data" are assumed to be causal variables. Many reference librarians have noticed a decline in recent years in the number of reference questions. I have attempted to capture this effect by using the year of the data as a variable in the regression equation. It has been hypothesized that this declined is due to the spread of electronic access to information. After testing the data in a regression equation, the hours of service was dropped. It did not add to the explained variance of the dependent variable. The final equation was:

$$\begin{aligned} \text{Number of Reference Questions} &= B_0 \text{ (intercept)} && + \\ &B_1 \text{ Number receiving BI} && + \\ &B_2 \text{ Size of User Population} && + \\ &B_3 \text{ Number of Service Points} && + \\ &B_4 \text{ Year of Data} && + \\ &\text{Error} \end{aligned}$$

Research Results

The effect of each independent variable on the number of reference questions received is recorded in Table 1.

TABLE 1
REGRESSION STATISTICS

Coefficient (B) for:	Estimate of B
Intercept	58,162
Number of Students receiving Bibliographic Instruction	3.24
Size of User Population	3.65
Number of Service Points	2,377
Year of Data	- 13,261

N = 498 Adjusted R² = .33

Based on the regression analysis, bibliographic instruction has a positive effect on the demand for reference services. In fact it has about the same effect as the size of the user population. Not surprisingly, the number of service points has a positive effect, but each subsequent year shows a decline in demand for reference.

An analysis of the residuals revealed that the errors were not normally distributed. The residuals have a high positive skewness. Rejection of normality was based on the Kolmogorov-Smirnov test. Therefore, a bootstrap was used to estimate the confidence intervals for the coefficients. (SAS was used for estimating the regression coefficients. SAS does not have a bootstrap procedure, but it is possible to write a bootstrap macro in SAS.) Five thousand resamples were taken from the original data, each resample being a sample of 498. Confidence intervals based on the bootstrap are given in Table 2.

TABLE 2
95% CONFIDENCE INTERVALS FOR COEFFICIENTS

Coefficient (B) for:	Lower value	Upper value
Intercept	-2,506	78,552
Number of Students receiving Bibliographic Instruction	2.19	7.08
Size of User Population	2.87	6.18
Number of Service Points	884	2,768
Year of Data	-20,737	-5,296

The adjusted R^2 of .33 shows that there is a fairly large variance in the dependent variable which is not explained by the independent variables. This is probably due in part to several measurement problems in the data. Despite ARL's guidelines, different libraries will count reference questions differently. Although all library instruction should have a common core of content, elements of the content will vary from library to library. This all tends to reduce the R^2 value. On the other hand, gross irregularities in the data would cause replications of the analysis over time to give contradictory results. Such in fact is not the case. The sample was divided by year of data and the same regression (minus the year of data) was run for each year. Table 3 below reports the value of the regression coefficient showing the effect of bibliographic instruction on the number of reference questions received. The values of the coefficients are all positive and consistent with the original analysis, which produced a value of 3.24. This supports the reliability of the original analysis and by inference the quality of the data.

TABLE 3
COEFFICIENTS FOR NUMBER OF STUDENTS
RECEIVING INSTRUCTION REGRESSED ON THE
NUMBER OF REFERENCE QUESTIONS RECEIVED
BY YEAR OF DATA

Year of the Data	Coefficient
1995	3.04
1996	3.00
1997	5.30
1998	3.84
1999	2.11
2000	2.67

Conclusions

A bibliographic instruction program increases the demand for reference services. The regression analysis, which is based on the assumption that the independent variables have a causal effect on the number of reference questions received, indicates that the number of reference questions will increase by anywhere from 2 to 7 questions for each person receiving bibliographic instruction. It appears as though instruction in bibliographic skills makes the student a more sophisticated library user, which in turn increases the student's demand for reference services. The effect of the other independent variables is more or less what one would expect.

REFERENCES

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