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LIBRARY USER EDUCATION AND THE EFFECTIVENESS OF LIBRARY PERFORMANCE

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Introduction

In 1975, Fjällbrant and Westberg expressed the general goals for a university library as follows:

"The academic library should aim:

1. to contribute to the realization of the aims of the university with regard to learning, teaching and research, by the acquisition of printed and non-print material, necessary to cover present and future information needs
2. to register and store the material acquired in such a way that it, not only permits, but even actively stimulates the use of the material
3. to adapt these information resources and services to the changing needs of information and society
4. to contribute to the integration of both national and international information resources." (Fjällbrant & Westberg, 1975) (1)

The university library may be visualized as a store of information. This information may be contained in a variety of forms - printed material, such as books and periodicals, non-printed material such as audio-tapes, video-tapes, films, slides etc, or in the form of impulses stored on magnetic tape or in a disc-memory. Each individual library functions as an information system consisting of an input (acquisition and registration), a store (open or closed access) and an output (user services). This is represented diagrammatically in Figure 1. The individual libraries are linked together in national and international networks of varying degrees of complexity. The acquisition and storage of information is not an end in itself, for the university library. If the material, often laboriously acquired, sometimes at considerable cost, is to be of use, then this material must be made available to those who could make use of it. Use of information depends partly on ease of access - that is partly on physical conditions, such as type of shelving and hours of opening, and partly on conceptual awareness of what resources are there to be made use of.

The effectiveness of the university library

The effectiveness of the library-based information system is dependent on the integration of a complex pattern of functions:

1. The acquisition of that part of the information which is relevant to the needs of a particular user group, from the total mass of available information.
2. The organization of the information bearing material in a way which allows maximum ease of conceptual access for the user, and convenience of handling and storage for the library.
3. Storage of the information carrying material in a form which promotes physical accessibility for the potential user.

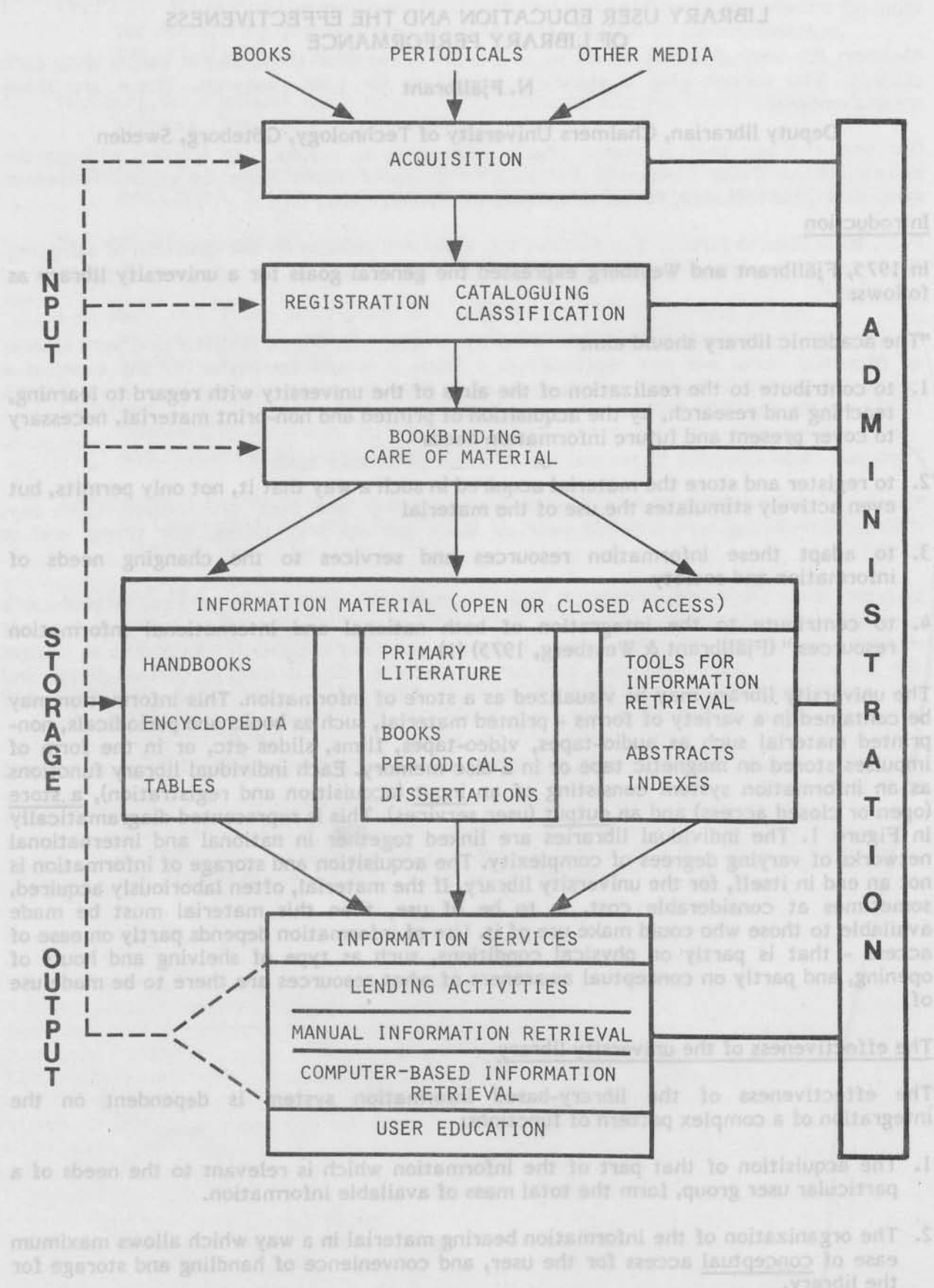


Fig. 1 Library System

4. User awareness of the information resources available, and knowledge of how to make use of these resources.
5. Individual help in manual and computer-based information retrieval.
6. Integration of the information resources on a national and international basis, in order to provide a greater quantity of information bearing material.

The effectiveness of library performance can be measured in terms of:

Quality of holdings - availability of information resources of high potential value for individual users. (This is dependent on the acquisition function.)

Quantity of use - actual use made of these resources by potential users. (This is dependent on such factors as methods of registration, type of storage, user education and library resources promotion.)

Value of information - how the information obtained from the library is used by the users.

These parameters are interrelated - for example, the availability of material of high potential value is likely to influence the quantity of use, by attracting a higher percentage of potential users.

User surveys at a number of Swedish University Libraries

In connection with the development of a programme of user instruction, user surveys were carried out at Chalmers University of Technology Library, Gothenburg (Fjällbrant, 1976) (2) and the Biomedical Section of Gothenburg University Library (Fjällbrant, 1976) (3). These two libraries both represent specialized research libraries serving user groups for which the quantity of information, and consequently published literature, is rapidly increasing. The general pattern of university education for the two student groups who use these libraries is also very similar - many hours of compulsory study per week for the undergraduates and few time-tabled hours for the postgraduates. Another recent user study, at a specialized Swedish research library was carried out by Sanner and Turesson, in 1973, at the Karolinska Institute Medical Library, Stockholm. (Sanner & Turesson, 1973) (4) The patterns of library behaviour observed in these studies were in many ways rather similar and at the same time, they differed from results obtained in a number of surveys of Library use in Britain during the sixties. (University Grants Committee, 1967 (5); Line, 1963 (6); Line & Tidmarsh, 1966 (7); Page & Tucker, 1959 (8); Tucker, 1961 (9).)

It was, therefore, difficult to know if the pattern which emerged from the surveys at Chalmers Library and the Biomedical Library, was typical for students at Swedish specialized research libraries, or whether they represented the general pattern of user behaviour at Swedish research libraries. For this reason, it was decided to carry out similar pilot-type surveys at Gothenburg Main University Library and Linköpings University Library. These particular libraries were chosen because they represented different types of library - Gothenburg University Library is a well established general academic library with a mainly closed-access collection. Linköping University Library, which serves one of the new Swedish universities - Linköping University, established 1969, has mainly open-access collections.

Students from the engineering faculty at Linköping were interviewed to allow comparison with engineering students at Chalmers with regard to their use of the university libraries - one of the closed access and the other of the open access type.

For comparative purposes, it was decided to select user groups for which the rate of growth of published material is much less than in science, technology and medicine. For this reason, interviews took place with undergraduates from the liberal arts faculties at Gothenburg and Linköping Universities and to postgraduates from the liberal arts faculty at Gothenburg University.

The method used was similar to that developed and used in the user survey at Chalmers University of Technology Library, in 1973. (See Ref.2.) A series of telephone interviews, following a structured questionnaire, was given to a random sample of undergraduate liberal arts students - 83 from Gothenburg and 86 from Linköping and to 53 engineering undergraduates from Linköping. These interviews were carried out by a group of trained interviewers. In the case of the postgraduate students from Gothenburg University, 19 randomly selected students from the faculty of liberal arts were given interviews. The questionnaire used was identical to that used in the Chalmers Library survey, with the exception that the names of the appropriate university libraries were substituted for that of Chalmers University Library in a number of the questions. Responses were transferred to punched card and analysis was carried out by means of an IBM 360/65 computer, using the OSIRIS programme for statistical methods developed at the University of Michigan, 1971. (OSIRIS, 1971) (10)

Some of the findings with regard to patterns of library use will be presented below.

The results are given in tables, in which G represents liberal arts students at Gothenburg University. L represents liberal arts undergraduates at Linköping University, LE represents engineering undergraduates at Linköping University. Ch represents engineering students at Chalmers and B represents medical and dental students at Gothenburg University. The results are expressed in percentages in order to facilitate comparison (see Line 1967, p.78 ff) (11)

The undergraduate material is dealt with first, followed by postgraduate results.

Amongst other things, students were asked to indicate the places which they used for non-timetabled optional studies. This can be seen in Table 1.

Place	Undergraduates					Postgraduates		
	G.	L.	LE.	Ch.	B.	G.	Ch.	B.
Home	96	94	94	91	89	89	76	45
University dept.	10	6	13	9	16	68	93	69
Univ. library	17	12	4	6	21	42	17	24
Dept. library	12	4	4	9	5	53	44	8
Public library	18	2	0	2	9	11	0	0
"Other" place	4	1	2	9	11	5	17	24

Table 1. Places used for optional studies

"Other" places were, for example, hospital clinics, other university departments or laboratories, etc. The pattern of places used for purposes of general optional study is fairly similar for the undergraduate groups, with the home as the main place of study. The postgraduates also studied at home, but made much greater use of the university departments and department libraries.

The amount of literature for studies that is bought by the students must obviously affect the amount of use they make of their university libraries for borrowing purpose. Students were asked to give a rough indication of the amount of 'literature for studies' that they bought: See Table II.

Amount of literature bought	Undergraduates					Postgraduates		
	% of sample							
	G	L	LE	Ch	B	G	Ch	B
Practically all	65	54	73	92	75	26	22	6
About half	27	31	17	6	16	39	46	27
Practically none	9	14	9	2	7	37	32	65

Table II. Amount of literature bought by students

Undergraduates bought a considerable portion of their set literature and this was particularly marked in the case of the engineering students and medical students. Postgraduates bought less of the literature required for their studies.

If the undergraduate students were not using their university libraries for borrowing 'set-course' material or as places in which to work - traditional student uses of the university library - it might be of interest to ask if students were aware of basic tools for information retrieval. Students were asked about their awareness of the existence of the subject catalogue, abstract and index publications and the inter-library loan service. Results can be seen in Table III.

Information retrieval tool	Undergraduates					Postgraduates		
	% of sample							
	G	L	LE	Ch	B	G	Ch	B
Subject catalogue	49	38	38	71	64	100	88	84
Abstracts	7	21	38	25	51	26	71	92
Indexes	16	15	26	32	57	58	66	98
Inter-library loan service	27	51	53	36	33	89	80	57

Table III. Awareness of the existence of tools for information retrieval

From Table III, it can be seen that between 29% to 62% of the undergraduates were unaware that their university library possessed a subject catalogue. It was interesting to observe that awareness of the existence of a subject catalogue was relatively greater at Chalmers University of Technology Library and Gothenburg University Library - traditional closed-access libraries - than at Linköping University Library which has open access.

The secondary publications of abstract and index type are most important in disciplines where there is the most rapid increase in published information, so it is not surprising that the liberal arts students at both Gothenburg and Linköping had least knowledge of their existence.

Knowledge of the inter-library loan service was greatest among the Linköping undergraduates, 51% - liberal arts and 52% - engineering, as compared with about 30% for the other undergraduate groups. This is a reflection on the fact that Linköping as a new university library, has smaller literature resources than the established libraries, and therefore much material has to be loaned.

Students were asked what method they would use to obtain information on a new subject topic - a surprising number (6-27% of the undergraduates and 19-37% of the postgraduates) said that they would use the author catalogue. This showed that the students in question had not a clear concept of the two fundamental library functions - identification of a known object, and information searching on a specific subject.

Library user education

The findings of these user studies were hardly in agreement with the general goal of "actively stimulating the use of material stored at the university library". Students were, in many cases unaware of the information resources at their university libraries. Whereas studies of perceived needs of student library users at Chalmers University showed that students thought it could be useful to go to the library in connection with such projects as the undergraduate thesis, in practice, few students were aware of the resources available. (Fjällbrant, 1977) (12)

It would appear that it is necessary to promote the resources and services available at the university library in order to increase its effective use. One way in which this can be done is by user education.

The library user education programme developed at Chalmers University Library, partly as a result of the studies described above, may be taken as an example of the growing interest in this library function. (Fjällbrant, 1976) (13)

This programme consists of four parts:

1. Orientation for new users (for about 1.000 users per year).
2. A 14-hour introductory course in information retrieval for undergraduates (for about 700 students per year).
3. A 35-hour advanced course in information retrieval for postgraduates (four courses are given every year).
4. One- and two-day seminars on manual and computer-based information retrieval for industrial engineers.

The programme is based on the following main goals.

After completing the user education programme the student should have obtained:

1. The ability to apply the principles of scientific communication to problems of information retrieval.
2. The ability to use the various tools available in the university library (and other libraries) in order to obtain information useful in connection with studies and later work, as and when required.
3. A sense of enjoyment in information searching.

The programme was evaluated in a number of different ways, in order to produce a "triangulation" or cross-checking effect and thereby obtain as full a picture as possible of the functioning of the courses. As the programme of library education was in a state of active development, many of the methods used were intended to provide formative evaluation on which course modifications could be based. The part of the programme which had received highest priority was the introductory course in information retrieval for the engineering undergraduates. As a result there was a corresponding concentration on the evaluation of this course. (Fjällbrant, 1977) (14)

Evaluation was carried out in a number of ways; by measures of student attitudes, by means of pre-structured interviews with a random sample of participants, by

performance measurements, by means of exploratory interviews and descriptive observation, and by studies of patterns of use of the library before and after the initiation of the programme. These studies have provided evidence of a marked increase in awareness of, and use of, the information resources available in the library. Thus awareness of tools for information retrieval before, and after, participation in the introductory course in information retrieval can be seen in Table IV.

Has Chalmers main library?	Before course	After course
Subject catalogue	71%	98%
Abstracts	25%	95%
Indexes	32%	95%
Interlibrary loans	36%	77%

Patterns of use studies, before and after the initiation of the user education programme, showed a marked increase in the number of undergraduates using Chalmers Library. Questions as to 'reason of use' of the library revealed that a higher percentage of undergraduates were using the library for information searches than as a place for study, or borrowing material etc. During 1976 there was a 19% increase in direct loans (i.e. non-interlibrary loans) compared with 1973 - before the start of the user education programme. Observation also shows a library that is now "humming with activity" (one notes the lack of work places and the use of group-study rooms, which are now booked to capacity).

User education and the effectiveness of the library

It can be seen that the user education programme at Chalmers University Library has increased the effectiveness of the library, as measured in terms of quantity of use by potential users. The user education programme has also affected the effectiveness of the library in other ways - by influence on the quality of the holdings, and methods of registration and storage.

As can be seen from Fig.1, user education is not an isolated function at the library. It grows, in part, out of existing library practice (See Fig.2.) User education must on the one hand be closely related to the needs of the users, and on the other hand, to the other functions and activities at the library. It provides the opportunity for increased contact between members of the library staff and user groups and this can, in turn, lead to increased awareness of the needs of the users, thereby affecting the type and quantity of material acquired and its potential value for borrowers. Awareness of user needs can also lead to changes in existing library practice. An example of this can be seen in the proposed experimental use of PRECIS - Preserved Context Indexing System (Austin, 1974) (15) as an alternative registration system to the Library of Congress Classification System at present in use at Chalmers Library. (Fjällbrant, Sørensen & Westberg, 1977.) (16)

The development of library user education in Scandinavia.

The programme of user education at Chalmers University of Technology Library, Sweden, described above, is one example which illustrates the growing interest in this aspect of librarianship in the Scandinavian countries. Recent developments in user education in Scandinavia have been described in a number of articles in the Proceedings of NVBFs Anglo-Scandinavian Seminar on Library User Education, November 2-4, 1976, Gothenburg, Sweden (Lau, 1977; (17) Uttu, 1977; (18) Haaland, 1977; (19) Sanner, 1977; (20))

In Scandinavia, it seems, that those libraries that have been most active, in the field of user education, have been those serving specialized user groups - such as university of technology libraries, or libraries serving new universities. (Fjällbrant, 1977) (21). Thus

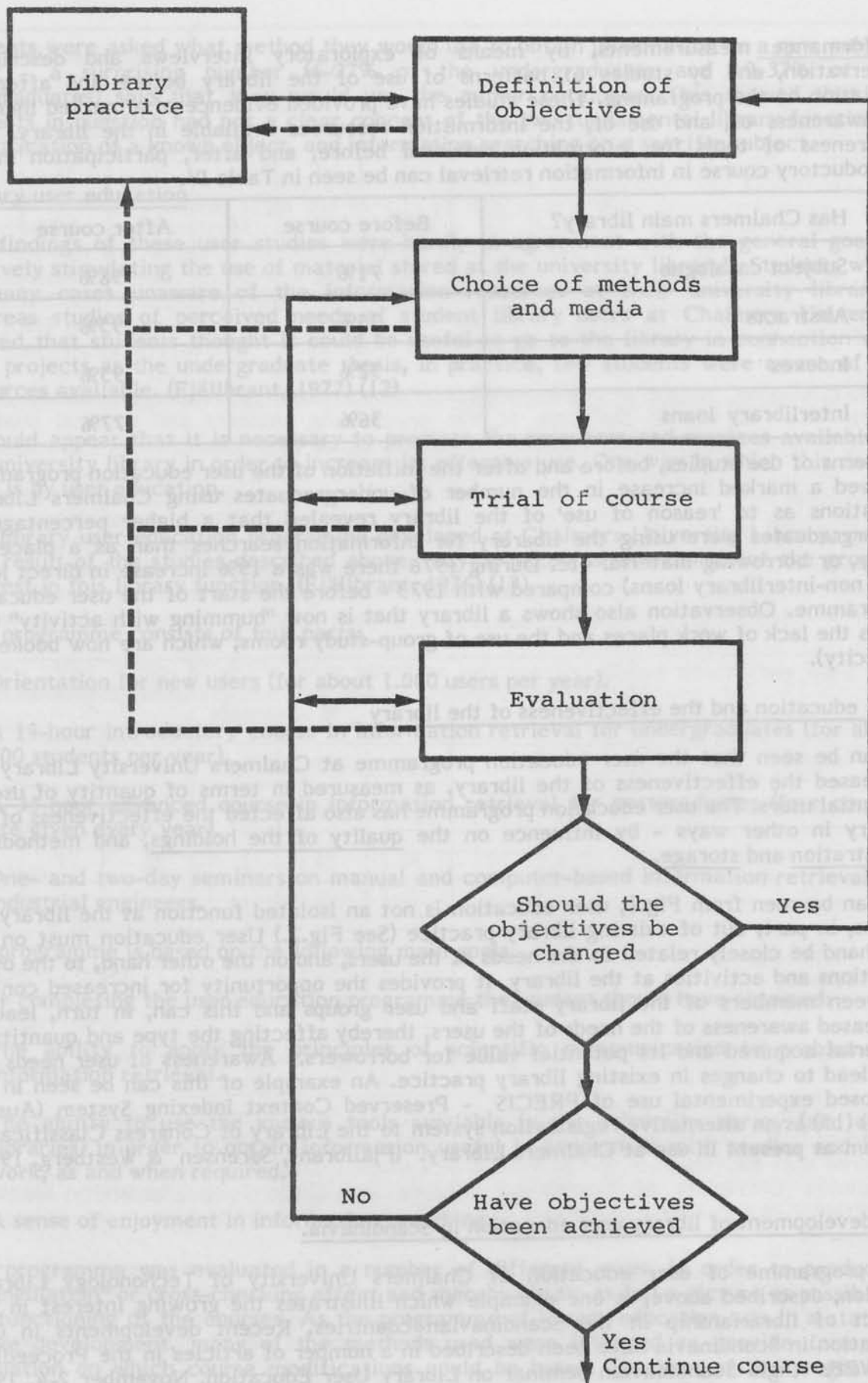


Fig. 2 Development of a course of education in relation to existing library practice

examples of active user education programmes can be seen at the Library of the Danish University of Technology, Copenhagen, (Jørgensen, 1977) (22); the Library of the Helsinki University of Technology, Espoo; (Uuttu, 1977) (23); the Norwegian University of Technology, Trondheim, (Gjersvik, 1977) (24); the Royal Institute of Technology Library, Stockholm (Sabsay, 1976) (25) and Chalmers University of Technology, Gothenburg, (See Ref.13.) This seems to be similar to the situation in Britain. As Stevenson says, in his study of user education in British university libraries, "Greatest impact seems to be made with scientists and engineers and at the polytechnics, and the ex-CAT and technological universities." (Stevenson, 1976) (26) (Cat = College of Advanced Technology.) Fjällbrant has suggested that the development of library user education is partly dependent on the type of institution of higher education served by the library. (See Ref.21.) Perhaps the active development of programmes of user education, at many University of Technology Libraries is a result of concern with problems of library effectiveness and management at these institutions.

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