# INFORMATION SEEKING PATTERNS AMONG NATURAL SCIENTISTS, SOCIAL SCIENTISTS AND HUMANITIES SCHOLARS AT THE UNIVERSITY OF TRANSKEI

By

*Daisy Jacobs*

Submitted in partial fulfilment of the requirements for the degree of Master of Information Studies in the Department of Information Studies, University of Natal.

Pietermaritzburg
1995

## ABSTRACT

The purpose of this study was to establish the rationale for the use of particular sources of information for research and teaching purposes by scholars in the natural sciences, social sciences and humanities at the University of Transkei. The sample of participants comprised of full-time faculty members of these three disciplines. One hundred and forty four questionnaires were hand-delivered to the subjects. Out of 144 subjects, 101 answered and returned the questionnaire, making the response rate 70.13 percent.

The data collected were analysed by using Statistical Analysis System(SAS), Descriptive Statistics (mean, median and standard deviation) to indicate the variability of the sample. Inferential Statistics, one-way ANOVA and two-way ANOVA were used to study the mean frequencies of respondents in using the different sources of information.

The key question was whether natural scientists, social scientists and humanities scholars differed significantly in their use of formal and informal sources of information, at the proposal, data collection and data analysis stages of research. The study indicated that at the proposal stage of research projects, there was no

significant difference among the three groups in their use of formal and informal sources of information. However, at the data collection stage, natural scientists, social scientists and humanities scholars differed significantly in their use of formal and informal use of information. Again at the data analysis and interpretation stage, the thee groups did not differ significantly in their use of formal and informal sources of information.

The findings of this study pointed to a more frequent use of informal sources of information by humanists than by scientists. At the same time, all three groups relied heavily on scholarly journals.

The terms of employment, viz. contract or permanent, was used to study their mpact of such variable on research. It was indicated that those on contract spent more time on research than those on permanent terms of employment.

An effort was made to ascertain the part played by the UNITRA library in the dissemination of information to the academics and others in the University community. The finding of this study pointed to the need for the library to impart library skills to its users, both technical and conceptual skills, and information about available resources. Inadequacy of the UNITRA library to cope with increasing demand for sources of information for research and disorganisation within the library ware made apparent by the study.

## ACKNOWLEDGEMENT

This study was made possible through the generous assistance of several individuals. I would therefore like to thank each one mot sincerely for all the help, encouragement and timely advice. First and foremost my grateful thanks to my supervisor Dr. A.M. Kaniki, for his support, encouragement, helpful and constructive criticism and his generosity in spending a considerable amount of time to help me. I am deeeply grateful to Prof. N.J. Horton for his faith in my work and encouragement at all times and to Mr Y. Baldeo for helping out with the statistics.

The assistance offered by Ms V. Malotana and Mrs B. Kentane of the Transkei National Library by supplying me with information on national library services is gratefully acknowledged. Finally my most sincere thanks go to my husband Jimmy, my daughter Donna and sons Ashley and Leslie whose love and support, and above all, constant encouragement led me on when I found it hard to go on.

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# CHAPTER 1

## INTRODUCTION

Crawford (1) observed that studies in the area of information use and needs developed, in large part, as a response to the tremendous growth of science and technology subsequent to World War II. They originated with a practical objective based upon the belief that if one could identify the information needs and uses of a population subset, one could design effective information systems. In all these, explained Herner, (2) the most important and least considered factor in the design of information and retrieval systems is the user himself.

The need to conduct research and generate user-oriented information is of vital importance to a developing country like Transkei, in particular, and the new South Africa in general. Kaniki (3) has stressed that not only is effective dissemination of research results of information necessary, but more importantly, the research results and information generated must be meaningful and useful to the user. In other words, the research conducted and information disseminated must be user-oriented. It is therefore the need for qualified, efficient and dedicated professional people in all the fields of service and technology who are capable of enriching and guiding the nation with their valid and qualitative information from their work and research findings. The research conducted in any faculty of a university community depends on the facilities of resources made available to these members. University libraries in developing countries therefore, have an important professional leadership role.

University libraries, by virtue of their broad-based subject interests and responsibility to support curricula and research, have an obligation to develop a systematic literature collection and development policy. Their collection and development policies must be aimed at the educational objectives of teaching, research and personal development of the faculties.

Bouzza has observed that despite the large body of literature, user studies have not evolved into a theory that can help in predicting the user's behaviour and in designing information systems (4). The same author further observed that this situation, partially has attributed to the variety of methods that have been used in conducting user studies. Consequently, it would be very difficult if not impossible to make any comparison of the results of these studies.

One factor that has inhibited the building of a theory in this area is inherent in the nature of the concept of information need and use. As Lipetz explained:

> Needs vary with time, with user, with purpose, with location, with alternatives, and so on. Before it
> becomes possible to design from theory an
> information system that will be ideal, or at least
> relatively effective, for the complex needs of a
> population of any size, we will require predictors
> of human needs and behaviour with respect to
> information that far-surpassed, in detail
> and accuracy, anything available now or in the
> foreseeable future. (5)

In recent past, reckoned Kaniki,

> theories such as diffusion and adoption, communication, learning and clinical theories have been used to predict user's behaviour and in the design and evaluation of information systems. (6)

The various methods employed in conducting user studies have not helped in theory building.

There are different kinds of information sources or channels. Information channels are the means by which ideas, opinions, facts and interpretations communicated. These channels may be formal like, books, journals, research reports, slides, audio tapes, gramophone records, films. The informal channels on the other hand, are after dinner discussions, casual meetings with colleagues, telephone calls or correspondence. The line between formal and informal channels is difficult to draw argued Ford (7), a reasonable approximation might be that formal channels are used by a number of people while informal channels operate on an individual, interpersonal basis.

## 1.1 STATEMENT OF THE PROBLEM

A search of the literature reveals that no objective study which examines and compares simultaneously the difference among the information gathering behaviour of natural scientists, social scientists and humanity scholars has yet been conducted

in South Africa. Some of the studies conducted on user studies are: "Information Gathering Habits of Biomedical Users", by Haffajee; (8) "User Education in the Academic Library" by Bell; (9) "Information and the Architect", Henning (10) and "User-focused evaluation of training programme effectiveness in a South African industrial company", by Cole (11). Others include: "Subject Access and its enhancement in online public access catalogues : results of a user survey in a university library," by Pienaar (12) "User satisfaction as a measure of subject reference performance in an academic library", by Dalton (13). A model for evaluating user friendliness of an interface to an information retrieval system", by Geyser (14); and "User evaluation of information retrieval systems : a methodological approach", by Boon (15) are the few published works on user education in South Africa. Besides these, there are some surveys done related to user studies, but no objective study which examines and compares simultaneously the differences among the information seeking pattern of natural scientists, social scientists, and humanity scholars has been conducted in South Africa.

In the past, due to legalised apartheid system, South Africa has been divided distinctly into information rich, economically advanced first world and the poor underdeveloped third world. Transkei and the other former homelands where the black community were grouped belonged to the latter group. Similar to other third world institutions, therefore, University of Transkei (UNITRA) also had far too many setbacks. The library facilities, the set syllabi and the curriculum of UNITRA were derived far inferior to those of the well developed South African universities.

Taking into consideration the above facts, this researcher believes a study of this nature which investigates the information seeking pattern of UNITRA staff in the faculties of natural sciences, social sciences and humanities would in part, provide an insight into the various sources of information used by these disciplines. It is hoped that by using standardised instrument in collecting data on the information seeking patterns of the three groups would make it possible to compare the various information sources needed and used by these scholars. This would ultimately provide the policy makers with vital information that would assist them in designing information services which will improve the quality of teaching and learning institution.

Libraries play an interface role between the universe of information and information resources on one hand, and user on the other. According to Kaniki, (16) information flow is improved if appropriate linkage exists and if specific people have the responsibility for information dissemination. Librarian, as the custodian of valuable information sources, must know the information needs of users and how to provide it. Making use of user's comments on services, materials and facilities, the library should adapt its policies for the betterment of its services to the clientele.

Rosenbloom and Wolek (17) have stressed that no information will become useful until it is translated into terms relevant to a need. Scientific, up to date information, can improve and revitalise the research process and new discoveries in a University. When an information need is satisfied, explained Kaniki, (18) then useful and

utilizable information has been effectively communicated or transferred. If information needs of researchers and academics, in the course of their work are met or satisfied, then one can safely assume that the quality of their academic results and research will be of better quality.

## 1.2 PURPOSE OF THE STUDY

The purpose of this study was to investigate the information seeking patterns of natural scientists, social scientists and humanists at University of Transkei. The researcher also attempted to investigate the types of and the extent to which the various sources of information are used by these scholars during the three stages of a research project, (i.e. proposal, data collection stage and data analysis stage and when initiating a study).

## 1.3 RESEARCH QUESTIONS

1. How do scholars in the natural sciences, social sciences and the humanities differ from each other in the frequency of use of formal and informal sources in general?
2. How do scholars in the natural sciences, the social sciences and the humanists differ from each other in their use of formal and informal sources of information at each of the three stages in a research project, i.e, proposal stage, data collection stage and data analysis stage?

3. How do scholars in the natural sciences, social sciences and humanists differ from each other in their use of formal and informal sources of information when initiating a study?

4. How are scholars in the natural sciences, social sciences and humanities similar to each other in their use of formal and informal sources of information?

## 1.4 SCOPE AND LIMITATIONS

This study was limited to the investigation of the information seeking patterns of full-time faculty members i.e., professors, associate professors, senior lectures and lectures in the disciplines of natural sciences, social sciences and humanities at the University of Transkei. Natural Sciences include: the departments of physics, chemistry, zoology, botany, computer science, mathematics and statistics. Social Sciences consist of the following departments: business administration, history, geography, psychology, library science, anthropology, criminology and law. Humanities comprised of languages, literature, music and philosophy.

This study however, did not consider the cognitive aspect of information, which according to Smalley (19) and Kobelski and Reichel (20) is the critical thinking approach. It is made up of three steps, namely acquisition, assimilation and consolidation where the user acquires new information; then manipulates the

information to fit a particular situation and finally evaluates the nature and sufficiency of this information. The cognitive aspect of information, though stimulating in itself, did not fall within the ambit of the present study.

The study was limited to Unitra as the findings of this research may be used specifically for management decisions such as collection development and provision of information services in the institution. As such, its findings may not necessarily be generalized to all South African universities where library situations may also be very different.

## 1.5 DEFINITIONS OF KEY TERMS

For the purpose of this study, the following definitions were used for the following key terms.

### INFORMATION

Ideas, facts, or any data that is valuable to people in their attempt to cope with problem solving and that which reduces uncertainty.

## INFORMATION NEED

The state of lack of desirable requisite or commodity (i.e. information) necessary to deal with a situation, as the individual sees fit. (21).

## INFORMATION SOURCES

Various communication providers such as persons, organizations, institutions, publications or media that can or may provide information to meet information needs.

## INFORMATION SEEKING PATTERNS

Various steps an individual goes through in a process of satisfying an information need.

## NATURAL SCIENCES

These include such disciplines as Physics, Chemistry, Biology-Botany and Zoology, Computer Science, Statistics and Mathematics.

## SOCIAL SCIENCES

Consists of disciplines such as Economics, Business Administration, History, Geography, Psychology, Sociology, Social Work, Anthropology and Library Science.

## HUMANITIES

They comprise of Drama, Literature, Philosophy and Music.

## NATURAL SCIENTIST

A person who teaches and/or conducts research at the university level in any of the areas of physical sciences.

## SOCIAL SCIENTIST

A person who teaches and/or conducts research at the university level in any of the areas of social sciences.

## HUMANIST

A person who teaches and/or conducts research at the university level in any of the areas of humanities.

## FORMAL SOURCES

Traditional information sources such as books, journals, abstracting and indexing sources that are recorded.

### INFORMAL SOURCES

These are person-to-person modes of communication such as correspondence, visits and discussions with persons in the same discipline, telephone calls and correspondence.

### COMMUNICATION

It is the act of sharing or exchanging useful information.

### CO-WORKERS

People who are employed by the same organization and who work in the same field of interest and/or in the same institution.

### COLLEAGUES

Scholars who work in the same or different field, but are not necessarily employed in the same institution.

## 1.6 SUMMARY

The standard of learning and the quality of research done in an institution of higher learning such as UNITRA depends on a variety of factors, one of which is the

information sources available to staff. Many authors have argued, however, that information transfer from one person to another, or from persons to groups, occurs when that information is used. It can therefore be assumed that when an information need is met or satisfied then effective communication or information flow has taken place.

University of Transkei, similar to many other institutions in developing countries, experiences problems of lack of effective information flow among its professionals. Furthermore, very little has been known about the information needs and the mode in which the academic staff gathered information for their teaching and research.

Although there have been several studies conducted in South Africa on user needs and behaviour, were not in depth comparative study showing the information gathering patterns of natural scientists, social scientists, and humanities scholars. Some of the studies conducted were on the information gathering methods of a particular kind of users, or one user education in academic library etc. This study is hoped to bring out the reasons why certain category of scholars use particular type of information. This would enable the library policy makers to design and organize UNITRA library for the development of both staff and institution.

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## CHAPTER 2

## A BRIEF OVERVIEW OF THE UNITRA LIBRARY AND OTHER LIBRARY SERVICES

Transkei, on the east coast of the Republic of South Africa, is described as "gently rolling" as it is made up of small hills and rolling mountains. Transkei was the first homeland to get its independence from South Africa in 1976. It has since April 27, 1994 been re-incorporated in the Republic and is part of the Eastern Cape Province.

Up until the end of 1975, Transkei had only a teacher training college and few schools. In 1974, the Paramount Chief, K.D. Matanzima, the then honourable Minister of Transkei approached the then Minister of Bantu Education Mr M.C. Botha with the request to establish a branch of the University of Fort Hare. (1). In 1976, the Umtata branch of the University of Fort Hare was established and housed in a temporary building, erected on the ground of Umtata Technical College. The then assistant Registrar, Mr J. de M. Malan and the initial core of administrative staff moved to Umtata on 26 October 1975. The branch was headed by Prof B. de Van de Merwe, who took charge on 6th January, 1976.

The University of Transkei (UNITRA) is one of the best architectural structures in South Africa. The Unitra library with its imposing outlook attracts both the members of Unitra community and the people from all around the country, to satisfy their information need. The institutions surrounding the university, like the Transkei College of

Education, the In-service Centre and the few training colleges in the former homeland, all make use of the University Library as there are no other good libraries in the vicinity.

Library facilities at the University of Transkei were established in January 1976 with a limited number of books, some of which were donations from Rand Afrikaans University.(2) The library started functioning fully with two professional librarians and few library assistants. By 1980, the library had extended its functions to acquisition, cataloguing and Inter-library loans.(3)

The UNITRA library started from very poor beginnings. Book stocks were obtained as donations from other well established universities of South Africa, for example; University of South Africa - 89 books, Rand Afrikaans University - 620 books, Cape Provincial Library Services - 19 books, the University of Port Elizabeth - 33 books, Port Elizabeth City Libraries - 41 book and from Mr C.L. Booth-21 books. Although the presence of the books gave the appearance of a library, these books were of very little use for teaching purposes. Although Unitra Library has expanded greatly as far as the book collection and the main stock area are concerned, it needs systematic organisation and development. The departments of the library that are fairly well developed as far as the size and nature of collection are the law library, the medical library, and the Africana Section.

The original enrolment of 132 students in 1976 grew to more than 4,000 by 1988 and exceeded 6500 in 1992. The staff strength has also increased slowly over the years.

The faculty of arts had about twenty two academic staff to run different departments then and now there are 305 academic members of staff. The present student population of the university is 6628. Besides the Arts Faculty that the university began with, there are several other faculties such as the Physical Science, Social Science, Medicine and Nursing Science, the Economic Sciences, and Law.

There are also post secondary educational institutions that have acquired affiliation with Unitra. These include Tsolo College of Agriculture, the Transkei College of Education, and the Transkei College of Nursing. Being aware of the rapid growth of trade and industry in Transkei, the university extended its programmes to complement Unitra, especially in the field of Applied Science, Industry, Technology and Commerce. The training of Engineering Technicians became one of the priorities in the extension of university facilities to Butterworth. A University Technicon's campus was opened at Butterworth in 1987 to offer National Diplomas in Civil Engineering. Although a branch of Unitra library was started, at the same time, the acquisition and processing of books and journals are still done from the main Unitra Campus. Today Unitra library has an establishment of 54 staff and 12 departments. Out of the total number, there are 2 deputy librarians, 1 librarian A, 5 librarians, 5 junior librarians, 22 library assistants most of whom are graduate students. The rest are clerical and administrative staff.(4)

According to the Library Annual Report for 1993, total number of books in stock are 138345 and total periodicals holdings are 2286.

## 2.1 DONATIONS

The library continues to receive donations from various organizations and individuals. One thousand two hundred and ninety five donations were accessioned in 1992 and seven hundred and thirty (730) in 1993. So far about 650 titles in both sciences and medical books have been purchased through Andrew Mellon Grant.(5)

## 2.2 RECORDS IN THE SABINET DATABASE

Although Unitra library is not fully computerized, it has access to Sabinet database. To date, 69 980 fully catalogued records have been input in the co-operative database. The improved ERUDITE package on SABINET has enabled to speed up the process of data conversion in preparation for a change from the card catalogue into a computerized system.

## 2.3 THE ROLE OF UNITRA LIBRARY IN THE COMMUNITY

Unitra committed itself to the upliftment of the community within its surrounding areas. In order to upgrade teacher training, all teacher training colleges in Transkei were affiliated to the University in 1981. The university monitors the academic quality of these institutions by allowing free access to all library facilities such as book stock,

journals, inter-library loan, Sabinet, and fax setting and marking examinations. Since Unitra library does not have a well organised collection for its own staff and students, this sharing narrows down the information gathering pattern and use of its staff.

## 2.4 TRANSKEI NATIONAL LIBRARY SERVICES

Transkei National Library was established by an Act of Parliament, Act No.11 of 1977. It acts as the Headquarters to the public libraries in town; school and college libraries; libraries in government departmental offices; and the library of parliament and supreme court.

At Independence, an arrangement was entered into between Transkei and the Cape Provincial Library Services (CPLS), in terms of which CPLS would continue servicing those libraries in some of the towns(6). Because of declining user numbers, some of these libraries, e.g. Umzimkulu, and Lady Frere had to be closed down.

Up to now the following libraries still operate as part of the CPLS, viz. Port St. Johns, Umtata, Butterworth, Idutywa, Engcobo and Lusikisiki.

The main users of the national library are the University students. Although they are not allowed to borrow books, they can freely use the collection and make use of the photocopying facilities. Unitra students make full use of the national library especially at weekends. An extension of the national library will be a partial solution for the congestion at Unitra.

## 2.5 TERTIARY LIBRARIES

Library collections in the colleges of education vary according to the size and type of diplomas offered in a given college. For example, Transkei College of Education (TCE) library collection differs from the rest (of the 13 libraries) in that it offers two types of diplomas, College Higher Education Diploma (CHED) and Secondary Teacher's Diploma (STD). The curriculum for the College Higher Education Diploma offers university courses. This means students in this programme require material that is unique from other similar education programmes. In effect, students and staff at these colleges require information similar to that used by the university staff and students.

Out of the 14 college libraries, only 3 subscribe to journal publications.(7) The rest of the libraries have access only to free journal publication, e.g. Educational, Optima and Plain Truth. About 60% of college libraries receive local newspaper.

In short, the majority of Transkeians who are involved in or pursuing higher education programmes are heavily dependent on Unitra library for its information sources. Few colleges like TCE, Bethel, and BTC., have A.V. material. This can be attributed to the price of AV material and electricity as most of the colleges are in the rural areas.

The majority of collection in the college libraries is irrelevant, inadequate, outdated and advanced. This is due to the fact that most libraries store student handbooks which may be outdated as most of the materials are received through donation, e.g.

Americana.(8) Such books may be too advanced for the students. Only few libraries have relevant, and up to date material, e.g. TCE (for it is a newly established college) and Bethel, (an independent institution) which does not rely on state funds.

## 2.6 COMMUNITY EDUCATION AND RESOURCE CENTRE (UMTATA)

The idea of setting up the Community Education and Resource Centre (CERC) was first conceived late in 1988 by the University of Transkei. The Transkei Social Workers Association (TRASWA), which has been helping unemployed matriculants to find work, was approached. This led to the setting up of a board of trustees during 1989 and a grant of R700,000 to set up and run the project for two years was secured (9).

CERC caters for school-going children (mainly high school) and school dropouts and is thus directly relevant to education. The Resource Room is open for all members of the local community and even responds to written requests for information from around South Africa. In Transkei, there is a dearth of career information and guidance and as a result of this, many persons never pursued tertiary study for sheer lack of knowledge. Hence, there is a real need for career information and guidance in this region.

### 2.6.1 **Transkei Development Resource Centre**

Transkei Development Resource Centre belongs to Transkei Development Corporation (TDC). The library at the Centre was meant to be a specialised reference library catering for the needs of TDC staff and outside bodies involved in development activities. A greater portion of the library's holdings therefore, focus on development related publications, reports and books.

Along the line, the need was felt to cater for the needs of staff members studying towards various degrees and diplomas, as the attainment of such qualifications would enhance their efficiency and performance. The library has therefore acquired a number of academic books, especially in the fields of management, marketing, economics and accounting. These books and other relevant publications are used by the staff and outside researchers.(10)

### 2.6.2 **Transkei Appropriate Technology Unit (TATU)**

TATU is situated on the outskirts of the city of Umtata. It is the brain behind every small scale project in Umtata. TATU library is an Appropriate Technology Library that houses approximately 4000 books and has an extensive reference section of all TATU's internal reports, a newspaper and magazine collection and an audio visual centre.

The TATU library is part of the Media and Information unit and is therefore in a position to produce their own publications. Since 1983, TATU has produced do-it-yourself booklets, for example "A Guide on how to make Soil Cement Bricks"(11). In the past, TATU has produced publications on development policy and thinking in South Africa.

TATU Library was set up in 1983 and is unique in Transkei in that it is a collection that is ten years old, and is somewhat extensive. Secondly, the technical information related to water, energy, health, manufacturing and the extensive collection of alternative education approaches is directly relevant to addressing the poverty crisis that this region finds itself in.

Students from Unitra and as far off as Natal use TATU library for research purposes (12). On average about 20 people visit TATU each month with such requests as "what trees grow in what season" to "what equipment is necessary for setting up a pre-school".

### 2.6.3 Problems encountered by school and college libraries

Inadequacy of the financial resources and lack of trained staff, and limited financial resources restrict the scope of any new project. Lack of accommodation/building and

shortage of furniture and equipment are other stumbling blocks in the organization and smooth running of any library in most of these cases, the collection is inadequate, irrelevant and outdated.

In the light of the above problems, adequate funding is essential for the smooth running of the library. The need for training and equipment of qualified librarians is a must. A need for the inculcation of reading habits and skills when students are still young such that they grow up to be mature readers who will know how to choose the correct sources.

### 2.6.4 **Summary**

Unitra is the highest institution of learning in Transkei. Besides providing for the information needs of its own staff and students, the university is obliged to help out the colleges and other institutions around. Since its collection and facilities are not large enough to cater for its own staff and students and those from outside the university community, the university librarian and staff need to work out strategies that would enhance its resources. If Unitra has to develop academically, its staff should have access to useful and up-to-date information when and in the way they need it, and it is only the library that can provide it either directly or indirectly. It is important for library authorities to have a proper check to see if they are providing the basic information needs of the university community more especially the academic staff.

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# CHAPTER 3

## REVIEW OF RELATED LITERATURE

Since the 1920's, a considerable number of user studies have been conducted. Studies on the information seeking behaviour of scientists date back only to the late 1940s. Since then, a large number of studies have been carried out on the various aspects of information seeking behaviour of scientists. (1). There is also considerable research done on the information seeking behaviour of social scientists, but there has been very little study done on comparing the information seeking behaviour of the various groups of scholars.

Inspite of the large number of surveys and several comparative studies done in the western world, very little factual information concerning the information seeking behaviour of these scientists and scholars has been gathered in South Africa. Because of its geographical separation and the past political isolation from the great centres of Europe and America, it is likely that the pattern here in South Africa may be different.

According to Mason (2), two user studies on scientific and technical information were carried out by Dr. Grant in 1963 and 1964 in South Africa. The first survey of the literature of user studies of scientists and researchers was done in August 1967 by the Council for Scientific and Industrial Research (CSIR) in South Africa. It is worth noting

that the first period of scholarly communication studies was largely concerned with the user of scientific and technical information. This situation was inherent in the fact that the use of scientific and technical information has traditionally been the area in which information problems were most generally felt and in which information workers were most active (3).

## 3.1 INFORMATION NEED AND USE

Over the years a considerable number of "user studies" have been conducted stressing such important points as information need, information use and information seeking behaviour of a particular group of users. According to Lin and Harvey (4), the information needs may be of two types, viz, channels (library facilities, audio-visual aids, training programmes etc), and substance (nature of material). The present study attempted to identify the various channels used by natural scientists, social scientists and humanists at UNITRA for specific work-related activities, i.e. research and teaching. The literature review highlights some of the general findings of studies on information needs, uses and information seeking behaviour related to university academics.

## 3.2 INFORMATION SEEKING BEHAVIOUR

According to Kaniki, the intangibility of "information and needs" have led to the difficulty in understanding and the lack of consensus among information

professionals as to what constitutes information need (5). This led to the belief that because information needs are difficult to quantify, they must be measured through information seeking.

Information seeking refers to the gamut of activities associated with the methods used or applied to obtain information about particular situation. These methods include backward chaining i.e., following up references cited in material consulted; semi-directed searching in an area of potential interest, e.g. in journals or current content. According to Kuhlthau (6), prioritization of sources as a filter on quality, monitoring and maintaining awareness of developments in an area through regularly following particular sources can be referred to as information seeking.

Within the past few years, there has been a noticeable shift in the conceptual approach to information studies to the user's perspective of information seeking and use. (7). The theories upon which most of these methodologies in the information seeking pattern have been based and borrowed from other disciplines. The concept of information seeking is also faced with some difficulties. For example, Ellis et al. (8), argued that there is a difference between information seeking and information searching. This is because observed Kaniki (9), information seeking is a cognitive state which is a process of reducing uncertainty in an organism, and information searching on the other hand is a logical process whose object is to satisfy that state,

Line (10) observed that the information "requirement" of a seeker is the bridging term; it can mean what is needed, wanted or demanded and hence can cover all three categories.

Information seeking can therefore be thought of as an attempt to obtain information in-order to satisfy an information need for problem solving or in making a decision.

## 3.3 INFORMATION SOURCES USED BY NATURAL SCIENTISTS

Communication in one way or another usually takes up a significant fraction of a scientist's working life. A study conducted in the early sixties about information communication by Parsman (11) found that chemical scientists spent about 17 hours per week on scientific communication as compared with 14 hours working on equipment. Menzel (12) reported that university scientists set a quarter of their working day in scientific communication. This, explained the same author, they did by dividing their time equally between receiving and giving information.

This scientific communication of information is considered under two main headings - formal sources (printed sources of information such as books, journals and reports etc) and informal sources (include discussion with a colleague, attendance at a conference, telephone calls etc). These two sources of information can also be explained as the information that is permanently stored and retrievable which is also relatively old. Information that is up to date, not stored permanently and the direction of information flow is chosen by the originator as informal. The formal sources of

information are usually designed to disseminate among large groups of people while the informal sources of information are designed to meet the needs of small numbers of individuals.

According to Parker and Paislely (13), Herner was the first to explore, in depth the use of formal and informal sources of information in science jointly. The study also showed that pure scientists depended on literature while applied scientists were colleague dependant in seeking information. Voigt (14) was of the opinion that a scientist spends much of his time in conversation with his colleagues to satisfy his need for information, to help him carry out his research work or to explain what he learns. Allen and Gerstberger (15) confirmed Voigt's finding and further added that literature was viewed as less accessible than discussion partners. Allen and Gerstberger further defined the phenomenon of "gatekeeper", as a person who dispenses professional and personal information and organisational systems.

Another study by Rosenburg (16) in 1966 and by Allen (17) in 1967 found that engineers turn first to the most accessible information channels and use these more frequently. The study by Gerstberger and Allen in 1968 further confirmed that information channels which are considered easier to use will be used more frequently than less easy to use channels. Also information channels that provide higher quality will be used more frequently than those providing lower quality and less reliable material.

Faibisoff and Ely (18), stated that professionals and researchers often contacted other professionals and researchers that they knew had the information they required at the moment. The reason, they believed, that scientists prefer to use informal communication channels is that information frequently passes through this network long before it appears in print.

The use of formal versus informal information sources also vary, argued Haffajee (19), according to experience and the type of work a scientist does, namely, whether he works in a theoretical or applied field. Several studies done in the late 1960s, pointed out the use of informal sources by experienced workers and higher use of formal sources by newer workers. A study by Van Styvendaele (20) showed that pure scientists rarely used the library to find books. Collection of specialized literature in different subject fields have been built separately. Thus pure scientists are self-sufficient and less interested in the library's collection.

In another study, Passman (21) found that physical scientists tend to rely heavily in their use of formal sources of information on journals. According to him, a pure scientist subscribed on average to 3 journals apiece, whereas an applied scientist subscribed to one.

Comparing the results of thirteen science user studies with those of INFROSS (Investigation Into Information Requirements of the Social Sciences), Skelton (22) found that the most important methods employed by physical scientists to retrieve

information were respectively : citations, abstracting and indexing journals, personal recommendation and chance. Skelton's study further revealed that physical scientists tend to use abstracting journals rather more for current awareness than for retrospective searching. Skelton's conclusion was that physical scientists often found information by chance rather than by formal use of bibliographic tools.

Wood (23), is of the opinion that scientists engaged in research and development (including academic workers) make constant use of formal channels, particularly scientific journals and abstracting publications, while the applied and industrial scientists find oral communication with colleagues in the same organization to be more useful. Both Skelton (24) and Wood (25), confirmed from their findings that research scientists make use of an "invisible college" (consists of a group of people with similar interests and who use a number of information communication channels). Through the "invisible college", the natural scientists are able to use sources of information such as exchange of reprints, reprints and manuscripts, telephone calls, conversation at conferences and local meetings, guest lectures and informal newsletters. According to Price (26), colleges are held together by highly influential people, who over the years have accumulated a large quantity of useful and up to date information.

Some studies reported differences among physical scientists in using the informal channels of information. Both Ford (27) and Paisley (28), showed that British physicists

relied more on formal sources of information while American physicists used informal information sources.

The status of an individual within his own organization is a key factor in information transfer. Although informal communication networks are widespread, explained Ford (29), they tend to operate at senior level; junior members of a system tend to rely heavily on formal channels.

A number of researchers have traced the communication of scientific information during various stages of research process. Smith (30) reckoned that scientists relied heavily on personal, informal channels of communication to obtain ideas, current information and feedback during the initial problem conceptualization stages. During the second stage of methodology development and data collection, informal sporadic contact with colleagues to obtain information on specific research problems occur concurrently with exhaustive searching of formal literary sources of information. During the final stages of interpretation of data and presentation of findings, scientists informally present their findings, initially at small gatherings and later to larger more formal audiences to obtain valuable feedback and critical peer assessment.

## 3.4 INFORMATION SOURCES USED BY SOCIAL SCIENTISTS

An investigation into information requirements of the social sciences carried out by Skelton (31) found that both natural scientists and social scientists made use of monograph and journal literature to a similar extent and the only difference was that natural scientists used journal literature slightly more. Although scientists and social scientists use the same methods for retrieving information, the degree of use varies.

Studies by Brittain (32), Guttman (33) and Van Styvendaele (34), reveal that researchers in social sciences use less of secondary bibliographical sources such as bibliographies, indexing and abstracting periodicals in retrieving references. "The reason for this", Jones (35) reckoned, "is that social scientists in general and historians in particular made heavy use of non-serial publications and concentrated significantly on a few core journals".

Both Guttman (36) and Line (37) supported that more experienced researchers in social science made use of abstracts and indexes while the beginners in research looked for information mainly in books. Subrahmanyam (38) was of the opinion that the low use of abstracting and indexing journals by social scientists is due to the non-availability of this type of source in the field of social science. This is especially true, agreed Kumar (39), of the less developed countries.

Another important feature in the area of information use by social scientists is that they depend on, and draw from both the sciences and the humanities. This is partly because the concept of "social sciences" as a distinguishable area of knowledge is comparatively recent.

Unlike the physical scientist, the social scientist made use of books for maintaining awareness (40).

## 3.5 INFORMATION SOURCES USED BY HUMANISTS

Studies in the field of information use show that humanities differ in their needs and uses of information from both physical scientists and social scientists. The Centre for Research on User Studies (CRUS) came up with the assumption that the Humanity Scholars have a tendency to work alone.

Stone (41) and Stieg (42) referred to the humanists as "solitary individuals". Fabian and Vierhaus (43) believed that the individualistic approach of the humanities scholars will continue in the future despite changes in approaches and methods brought about by computerization.

One consequence of this individualistic nature is the small number of collaborative efforts among humanists. This could be contributed to the fact that the "invisible college" is less visible in the humanities.(44) A further aspect to this working alone is

the tendency of humanities scholars not to delegate literature searching. Burchard (45) attributed this tendency to the fact that humanists did not have secretaries or research assistants working for them. Stone (46) thought that this behaviour might be a function of a lack of trust in others to conduct searches on their behalf and the problem of communicating their needs to others.

Another tendency of humanists is to browse. Frye (47) explained this phenomenon saying that in order to deal with the resources of modern libraries, the scholars need to know what they are looking for, but that was not the case with the humanity scholars. They needed to browse, explained Stone (48), in order to scan quickly through the various volumes that usually appear. Literature shows that although humanists used both books and journals, they depended heavily on books.

Weintraub (49) was of the opinion that humanists' appetite for books is insatiable. They simply feel better by being surrounded by books of which they can only need a fraction.

Unlike scientists, humanity scholars relied heavily on formal sources of information. Steig (50), commented on the heavy use of books and periodicals by the humanity scholars. This is because, explained the same author, these are sources where historical research usually appears.

Humanists made more use of retrospective coverage than current materials. The

former category of materials seem to be of special value to humanity scholars. The main reasons for these are : humanists prefer materials that are older than ten years; older materials can be used for purposes of comparison, and the retrospective (non current) materials are needed, if they need to go back to the original documents (51).

Garfield (52) and Kumar (53) believed that: Unlike scientists, humanists tend to rely more on primary sources of information rather than secondary sources. This may be due to the scarcity and inadequacy of these sources.

Accessibility to a particular channel is also determined by distance. The choice and use of information channel especially in the developing countries, emphasised Kumar (54), depended largely on the distance and accessibility of the material. Ford (55) concluding his study on the factors affecting the use of information channels, explained that since quality of information channels govern the acceptability of the information delivery, the best channels should be made available.

A study by Garvey and Griffith (56) noted that psychologists used the literature and conversation with colleagues in the initial stages of research to obtain the relevant information and define problem areas. Allen (57) disagreed with this way of thinking saying that information is needed more for the analysis and interpretation of data.

An important feature in the use of information by scientists and engineers is that those information channels which are considered easier to use will be used first in the course of an active search (58). Information channels which provide information of higher quality or reliability will be preferred for better results.

Paisley (59) found that scientists at the frontier of a speciality know each other and keep track informally while technologists keep abreast by close association with co-workers in their own organization. Van Derlan and Winters found that the need and demand of engineers for information is greatest in the initial stage of a project. This extensive search gradually decreases and is replaced by person-to-person communications. Social scientists on the contrary, considered the need for books and journals as very important during the methodology stage. Both humanity scholars and social scientists made use of the assistance of more experienced colleagues in the field during the data analysis and presentation stage.

## 3.6 FACTORS AFFECTING THE INFORMATION USE OF NATURAL SCIENTISTS, SOCIAL SCIENTISTS AND HUMANITIES SCHOLARS.

A wide variety of characteristics have been postulated as having effects on user behaviour. According to Gerstberger and Allen (60), Ford (61), Rosenburg (62), and Paisley (63), the factors that influence the use of particular information channel are, quality, availability, accessibility and ease of use of materials, related to the information systems. Ford (64), in his study of the user behaviour of "University

Libraries", explained that factors such as seniority, experience, educational level, speciality and professional activity and orientation are all related to information-seeking behaviour.

Rosenburg (65) supported that availability of the source and ease of use are the two significant factors in the use of information while Ford (66) and Guttsman (67) advocated that accessibility and quality are the two principal factors which determine the use of a particular communication channel.

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An important feature in the use of information by scientists and engineers is that those information channels which are considered easier to use will be used first in the course of an active search. Gerstburger and Allen are of the opinion that information channels which provide higher quality and reliability will be preferred for better results (70).

A study conducted at Bhabha Atomic Research Centre (BARC) by Balaraman and Nagarathna (71) found out that reference books including handbooks are used more by engineers and workshop personnel while scientists made very little use of them. They further discovered that engineers seldom referred to reports while scientists are always eager to reach them. Biologists, they felt, referred to books more than any other scientist.

Paisley (72) reckoned that scientists at the frontier of a speciality know each other and keep track informally while technologists keep abreast by close association with co-workers in their own organization. A study by Van Deslan and Winters found that the need and demand of engineers for information is greatest in the initial stage of a project. This extensive search gradually decreases and is replaced by person-to-person communications. Social Scientists on the contrary, considered the need for books and journals as very important during the methodology stage. Both humanities scholars and social scientists make use of assistance of more experienced colleagues in the field during data analysis and presentation stage.

Ellis' (73) study showed that the use of information sources varied from one phase of the research project to another. Most of the chemists did their major information gathering at the start of, or during the life time of a project. Some others explained that information - gathering reached its maximum early in the project and declined in the middle and increased slightly more in the final stage.

Both Kaniki (74) and Bouzza (75) drew conclusions from their studies that information needs differ from group to group, from place to place and from time to time. This conclusion suggests that by analysing the circumstances in which individuals use particular information sources and the purpose for which information is sought, we can determine their information needs.

Looking at the criteria by which information seekers select sources of information, Line (76) came up with the idea that motivation, persistence, thoroughness, orderliness, independence and awareness of source and language belonged to personal factors. The users' reactions to and judgements of a service are often based on subjective impressions, explained Martyn (77) and the physical appearance of a information service may either increase or decrease the user's confidence in the value of the system.

Some of the factors that are identified are up-to-datedness, the use of an information provider and so on. They also depend on the characteristics of the information seeker, the social organization factors such as the characteristics of the work team and the task requirements. The conclusion drawn by Kaniki (78) is that information-seeking is not restricted to a narrow topic but should be able to analyse it according to individual's information seeking behaviour and his education and training.

## 3.7 SUMMARY

As the technological development improves, the need for more information also arises. This can be attributed to the ever increasing demands for information due to increased amount of research that are carried out in institutions of higher learning around the world. A large number of studies on the information seeking behaviour and patterns have been conducted in order to understand the need for information by the various categories of researchers. The results of these findings will enable the information systems to provide the useful information for its users.

Various studies conducted also point out that information channels which provide information of higher quality or reliability will be preferred for better results. It is then of paramount important for the libraries to investigate the most useful channels and sources that would be used most by the academics and hence provide these information sources.

Accessibility and ease of use are other factors that either encourage or prevent the use of certain sources. Academics and researchers lack ample time. They usually go for information that can be obtained easily and quickly. Librarians can play a vital role in providing the needed information to those who seek it.

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## CHAPTER 4

## RESEARCH DESIGN AND METHODOLOGY

This study was designed to investigate the information seeking patterns of natural scientists, social scientists and humanity scholars at the University of Transkei. It was also aimed at investigating the part played by the library in providing the information needed by the faculty members.

The target population was that of teaching and research full-time staff members of the above mentioned faculties. The study was intended to cover a new field, that of comparing and differentiating the use of both formal and informal sources of information by the three faculties which had not been done before in South Africa. In a study of this nature where the information seeking behaviour was not accessible to the direct observation of the investigator, the survey method was chosen as the most appropriate research technique for this study.

According to Kerlinger (1) surveys attempt to collect data and determine the incidence, distribution and interrelations among variables and thus focus on the beliefs, opinions, attitudes, motivations and behaviour.

In a similar vein, Isaac (2) explained that "survey method is a means of gathering information that describes the nature and extend of specific set of data ranging form

physical counts and frequencies to attitudes and opinions. This information can be used to establish baselines against which future comparisons can be made to analyze trends across time.

The instrument used in collecting data from respondents was the mailed questionnaire (Appendix C). The questionnaire used for data collection in this study was an adaptation of Bouazza's questionnaire. Permission was sought (See Appendix A), to use Bouazza's questionnaire. It was learned later that Bouazza was away from his original address in Tunisia. It was assumed that once he received the request, permission would be granted. After having collected the data in this manner, the study attempted to determine the frequency of use of various sources according to discipline.

## 4.1 STUDY POPULATION

The subjects of the study were 144 full-time staff members of the faculties of Natural Sciences, Social Sciences and Humanities Scholars at the University of Transkei. The staff members were those in the ranks of Professors, Associate Professors, Senior Lecturers and Lecturers. No sampling technique was used in the data collection as the whole population was included in the study.

The names of subjects were obtained from the University of Transkei prospectus 1994. At the time of the data collection there were only 144 professional staff present in the

three faculties mentioned above and the questionnaires were hand-delivered by the researcher on the 10th April. Of these 144, forty one (41) members belonged to the Faculty of Science (28,5% of the total population); 58 members belonged to Social Sciences. (40.3% of the total population) and 45 to the Humanities (31.2% of the total population). However, of the 144 questionnaires that were distributed to the faculties, only 51 were returned. A second round of delivery and reminder on the 28th April enabled the return of another set of 28. A further reminder after ten days brought the last return of 22 more making a total of 101. Of these, only 86 could be used as the rest were incompletely filled. Eight six completed responses (59.7%) were used for data analysis.

The final count of the returned questionnaires according to faculty were:

Natural Sciences : 29 (33.7%)

Social Sciences : 35 (40.7%0

Humanities : 22 (25.6%)

The first section of the questionnaire i.e., questions 1 - 7, were designed to collect information on research and teaching, their academic rank, experience in teaching and conducting research as well as the conditions of their service, i.e. either permanent or contract. Question 8 was meant to extract information on the use of sources of information in general. Question 9 sought information on the frequency of use of information at each of the three stages in a research project (research

proposal, data collection and data analysis and interpretation). Question 10 tried to collect information on the frequency of use of various sources of information when developing a new course and when initiating a study.

Respondents were given a questionnaire accompanied by a cover letter (Appendix B) explaining the purpose of the study. The researcher also explained to respondents about the importance of the study both to the Institution, the respondents themselves as well as to herself.

### Pretest of the Questionnaire

As the questionnaire has not been tested in the South African environment, the researcher felt the need to check its validity and reliability. The researcher therefore administered a pretest of the questionnaire. As a sample of seventeen faculty of science staff members, at the University. A copy of the questionnaire together with a cover letter were sent by the internal mail. Ten, or 59 percent of the sample population completed and returned the questionnaire with some constructive criticisms. One of the more positive criticisms was the need for hand-delivering the questionnaire for a better return.

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# CHAPTER 5

## ANALYSIS OF DATA AND PRESENTATION OF STUDY FINDINGS

The data collected were input into the computer and analysed by using Statistical Analysis System (SAS). Descriptive Statistics (mean, median and standard deviation), were used to indicate the variability of the sample. According to Borg and Gall (1), the advantage of descriptive statistics is that they enable the researcher to use one or two numbers to represent all the individual scores of subjects in the sample. Inferential statistics, one-way Anova and two-way Anova are used to make inferences from sample statistics to the population parameters, and to study the differences between the mean frequencies of respondents in using the different sources of information. Analysis of variance also allows the researcher to compare sub-groups that vary on more than one factor.

Scheffe procedure is used for evaluating differences between all possible pairs of groups, while holding the probability of type 1 error to a maximum of 0, 05 or 0, 01. (2,3 &4). This means that it identifies which mean differs from which other mean to its smallest detail. The Scheffe test is particularly valuable in this survey,where the three groups are unequal, (natural scientists 29, social scintists 35 and humanities scholars 22).

## 5.1 CHARACTERISTICS OF RESPONDENTS

Eighty six completed and returned questionnaires were used for the purpose of statistical analysis. Out of 86 returns, 29 or (33.72%) were natural scientists, 35 or (40.70%) were social scientists, and 22 or (25.58%) humanists.

**TABLE 1**

Distribution of the Population of the Study by Discipline and Department.

| NATURAL SCIENCE | | SOCIAL SCIENCE | | HUMANITIES | |
|---|---|---|---|---|---|
| APPLIED MATHS | : 1 | ANTHROPOLOGY | : 4 | DRAMA | : 4 |
| BOTANY | : 7 | ECONOMICS | : 4 | ENGLISH | : 5 |
| CHEMISTRY | : 7 | BUSINESS AD | : 5 | LANGUAGES | : 6 |
| COMPUTER SC | : 3 | INFORMATION SC | : 3 | LAW | : 2 |
| MATHEMATIC | : 1 | GEOGRAPHY | : 2 | MUSIC | : 2 |
| PHYSICS | : 3 | PSYCHOLOGY | : 3 | EDUCATION | : 3 |
| ZOOLOGY | : 4 | RELIGIOUS ED | : 2 | | |
| STATISTICS | : 3 | SOCIOLOGY | : 4 | | |
| | | HISTORY | : 3 | | |
| | | PHILOSOPHY | : 5 | | |
| TOTAL | : 29 | | : 35 | | 2 2 |

Unitra is sometimes referred to as a "part time university" because of the large numbers of part-time students mostly, of social sciences, that attend the evening lectures. The distribution of respondents in the faculties are natural sciences, social sciences and humanities seem to represent accurately the distribution of these faculties

**TABLE 2**

**RESPONDENTS DISTRIBUTION BASED ON DISCIPLINE**

| FACULTY | FREQUENCY | PERCENTAGE |
|---|---|---|
| NATURAL SCIENCES | 29 | 33.72 |
| SOCIAL SCIENCES | 35 | 40,70 |
| HUMANITIES | 22 | 25,58 |
| **TOTAL** | **86** | **100.00** |

## 2. DISTRIBUTION OF RESPONDENTS INVOLVED IN RESEARCH

Twenty nine scientists answered the questionnaire. Out of this, 19 or 65.5% indicated that they are involved in research. Out of 35 social scientists, 27 or 77.1% are involved in research. Only 12 out of 22 or 59% of the humanities showed that they are involved in any kind of research.

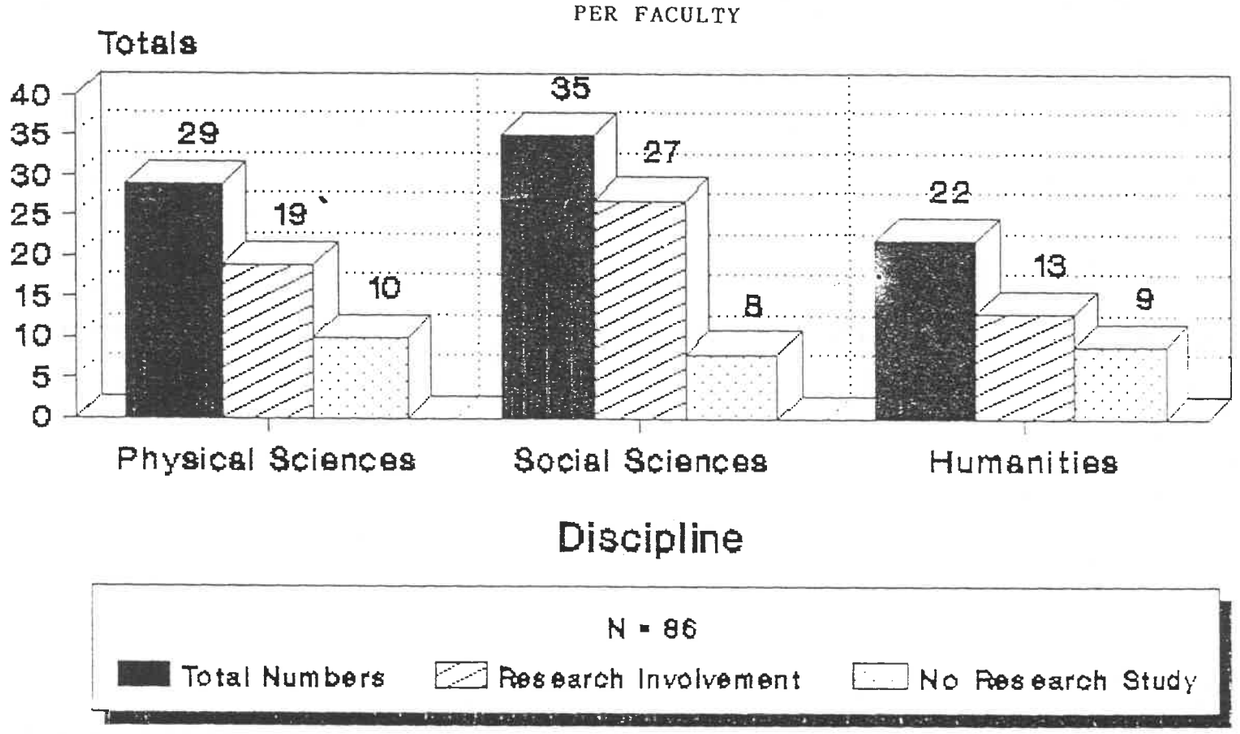
**TABLE 3**

N = 86

Distribution of Respondents involved in Research

| DISCIPLINE | TOTAL NUMBERS | INVOLVED IN R. | % |
|---|---|---|---|
| NATURAL SCIENCES | 29 | 19 | 65.5 |
| SOCIAL SCIENCES | 35 | 27 | 77.1 |
| HUMANITIES | 22 | 12 | 59 |
| **TOTAL** | **86** | **58** | |

# Distribution of Respondents Involved in Research

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## 3. DISTRIBUTION OF RESPONDENTS INVOLVED IN TEACHING

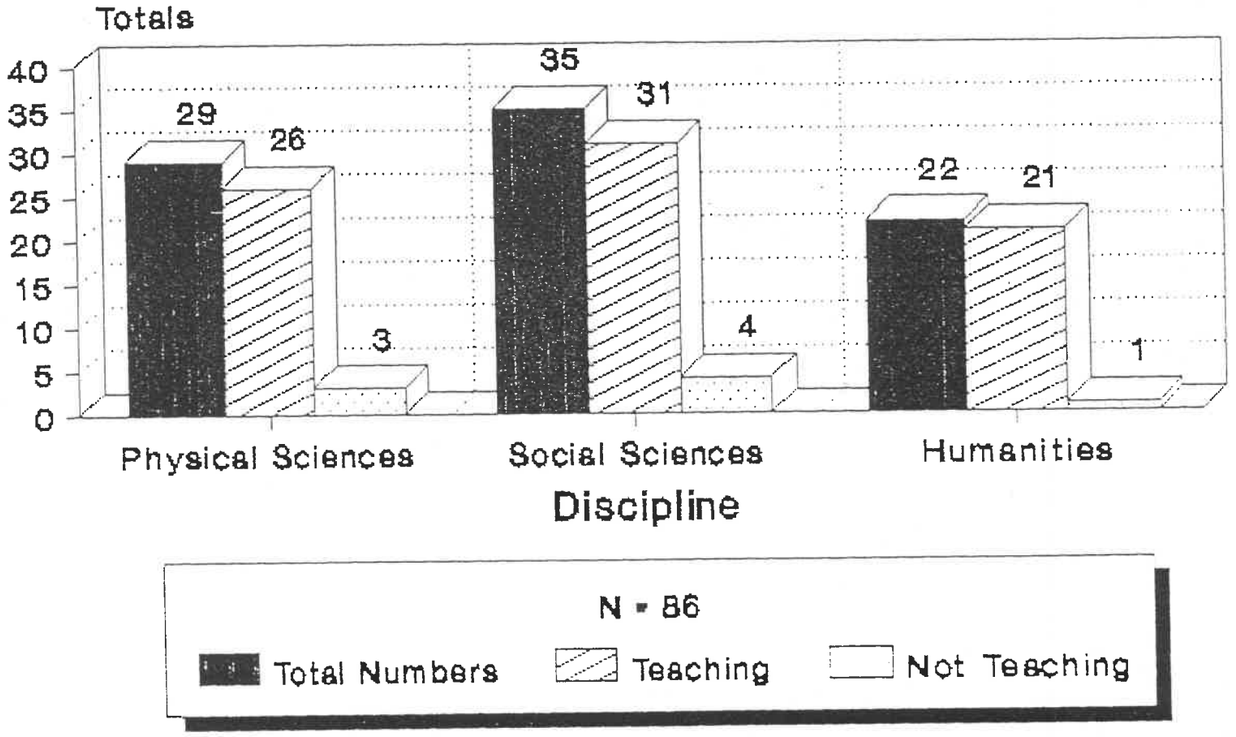
The main aim of Unitra is to educate the community around, hence classes are held for both full time and part time students, i.e. both day and night teaching. So out of 29 natural scientists, 26 indicated their involvement in teaching, which is equivalent to 89.7%. Out of 35 social scientists, 31 or 88.6% and 95.5% humanities scholars answered positively to the involvement in teaching. The responses indicated that both the natural scientists and social scientists spent more time in research than in teaching compared to that of the humanities who were involved more in teaching than research. The main reason could be due to scarcity of research funds available to the humanities. In South Africa, Foundation for Research Development funds are readily available for scientific research. Scholarships and bursaries are extended to the social scientists. This is not the case with the humanities.

**TABLE 4**

Distribution of Respondents based on Teaching

| DISCIPLINE | TOTAL NUMBER | INVOLVED IN TEACHING | % |
|---|---|---|---|
| PHYSICAL SCIENCE | 29 | 26 | 89.7 |
| SOCIAL SCIENCES | 35 | 31 | 88.6 |
| HUMANITIES | 22 | 21 | 95.5 |
| **TOTAL** | **86** | **78** | |

# Distribution of Respondents Involved in Teaching

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## 4. DISTRIBUTION OF RESPONDENTS' TIME BETWEEN TEACHING AND RESEARCH

The following table shows how the time is divided between research and teaching. Two or 6.9% percent of the natural scientists indicated that they spend more time in research than teaching; while 15 on 51.7 percent indicated that they spend more for teaching than research and 12 or 41.4 percent indicated that they spent equal time on research and teaching. Out of the 35 social scientists, one or 2.9 percent answered saying that they do more research than teaching, while 25, or 71.4 percent revealed that they do more teaching than research. Nine or 25.7 percent stated that they spend an equal amount of time on teaching and research. Among the humanities, three or 13.6 percent spend more time in research; 17 or 77.3 percent spent more time in teaching while only two or 9.1 percent divide their time equally between research and teaching. The data show that the humanities spend less time on research compared to the other two groups of scholars.

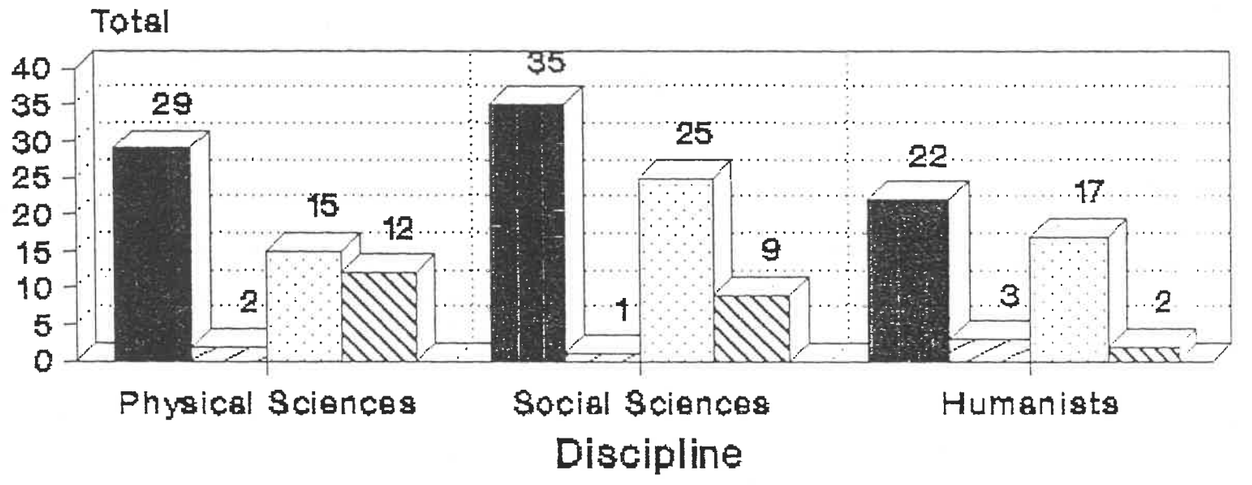
**TABLE 5**

N = 86

Distribution of Respondents' Time Between Research and Teaching

| GROUP | MORE TIME IN RESEARCH | % | MORE TIME IN TEACHING | % | EQUAL TIME BETWEEN R/T | % |
|---|---|---|---|---|---|---|
| NATURAL SCIENTISTS | 2 | 6.9 | 15 | 51.7 | 12 | 41.4 |
| SOCIAL SCIENTISTS | 1 | 2.9 | 25 | 71.4 | 9 | 25.5 |
| HUMANITIES | 3 | 13.6 | 17 | 77.3 | 2 | 9.1 |
| TOTAL | 6 | | 57 | | 23 | |

# Distribution Of Respondents Time
## Between Research And Teaching

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## 5. DISTRIBUTION OF RESPONDENTS ACCORDING TO RANK

The responses that were received show that out of 29 natural scientists, there were five or 17.2% professors 4 or 13.8% associate professors, and 13 or 44.8% senior lecturers. The distribution among the social scientists are, three or 8.6% professors, three or 8.6% associate professors, 31.4% senior lecturers, and 18 or 51.42 lecturers. Among the humanities, this distribution was respectively one or 4.5; two or nine %, eight or 36% or 11 or 50%.

**TABLE 6**

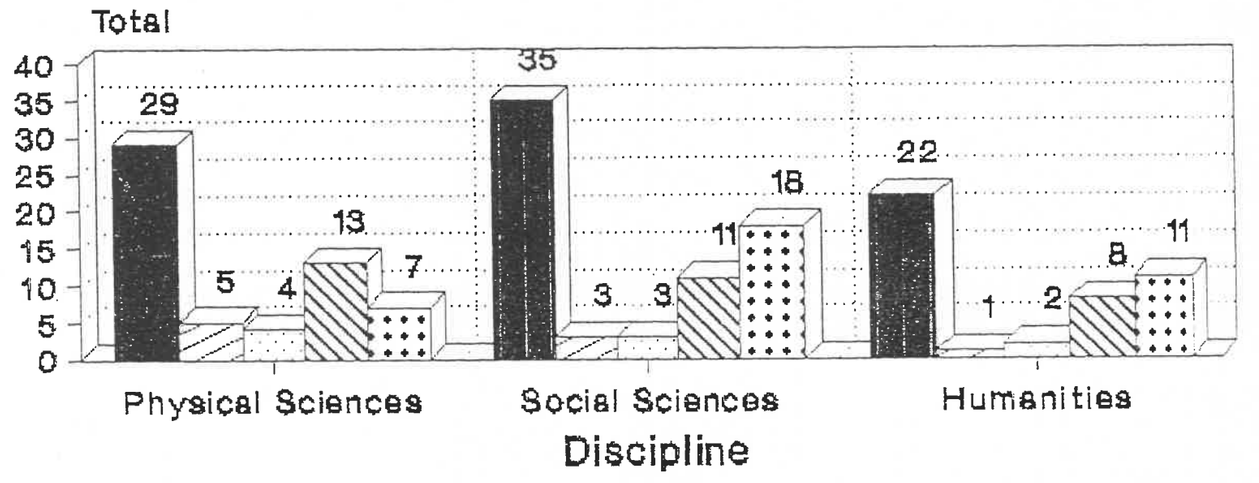
Distribution of Respondents According to Academic Rank

N = 86

| DISCIPLINE | TOTAL | PROF. | % | ASSOC. PROF. | % | SENIOR | % | LECT. | % |
|---|---|---|---|---|---|---|---|---|---|
| PHY. SC. | 29 | 5 | 17.2 | 4 | 13.8 | 13 | 44.8 | 7 | 24.1 |
| SOCIAL SC. | 35 | 3 | 8.6 | 3 | 8.6 | 11 | 31.4 | 18 | 51.4 |
| HUMANITIES | 22 | 1 | 4.5 | 2 | 9 | 8 | 36 | 11 | 50 |
| **TOTAL** | **86** | **9** | | **9** | | **32** | | **36** | |

# Distribution of Respondents

## Based on Academic Rank

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## 6. DISTRIBUTION OF RESPONDENTS BASED ON EXPERIENCE IN TEACHING

Table 7 shows that the deviation from the means as expressed by the standard of deviation and variance seems to be quite high among humanists (S.D. = 9.88) and natural scientists.

**TABLE 7**

Distribution of Respondents based on Experience in Teaching

N = 86

| DISCIPLINE | TOTAL | MEAN | S.D | VARIANCE |
|---|---|---|---|---|
| NATURAL SCIENCE | 29 | 12.90 | 8.61 | 31.47 |
| SOCIAL SCIENCES | 35 | 10.88 | 6.39 | 40.77 |
| HUMANITIES | 22 | 12.55 | 9.88 | 97.61 |
| **TOTAL** | **86** | | | |

## 7. DISTRIBUTION OF RESPONDENTS BASED ON EXPERIENCE IN CONDUCTING RESEARCH

A comparison of tables 7 and 8 reveals that although all three groups show that their experience in teaching is longer than that of research, humanities show a marked difference in their teaching to that of research.

**TABLE 8**

Distribution of Respondents based on Conducting Research

N = 86

| DISCIPLINE | TOTAL NUMBERS | MEAN | S.D. | VARIANCE |
|---|---|---|---|---|
| NAT. SCIENCES | 29 | 11 | 6.58 | 43.25 |
| SOC. SCIENCES | 35 | 7.70 | 5.65 | 31.88 |
| HUMANITIES | 22 | 8.67 | 6.46 | 41.69 |
| **TOTAL** | **86** | | | |

## 8. DISTRIBUTION OF RESPONDENTS BASED ON THE CONDITION OF EMPLOYMENT.

Table 9 shows that out of 29 natural scientists, 14 are employed on permanent basis and 15 on contract, while that in Social Sciences, 25 out of 35 are permanent employees and nine are on contract. The largest number of permanent employment, that of 20 out of 22 is found among the humanities and only two on contract.

**TABLE 9**

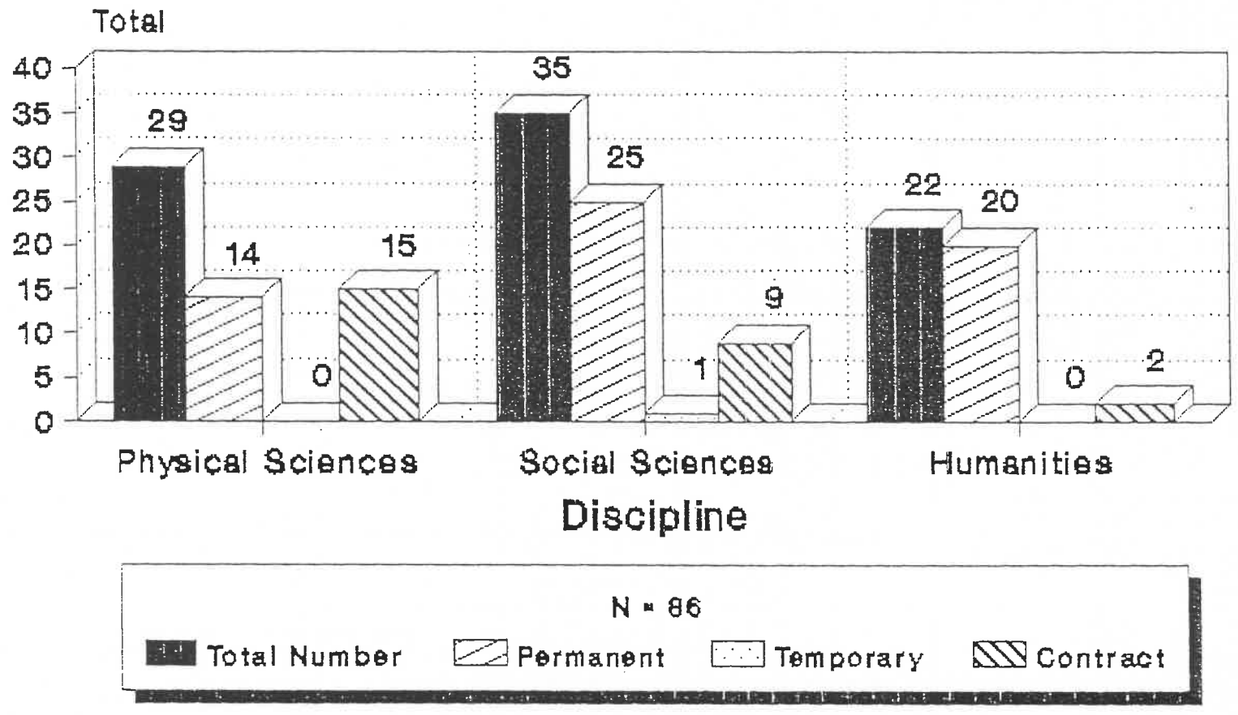
Distribution of Respondents based on condition of employment

N = 86

| DISCIPLINE | TOTAL NUMBERS | PERMANENT | TEMPORARY | CONTRACT |
|---|---|---|---|---|
| NAT. SCIENCES | 29 | 14 | 0 | 15 |
| SOC. SCIENCES | 35 | 25 | 1 | 9 |
| HUMANITIES | 22 | 20 | 0 | 2 |
| **TOTAL** | **86** | **59** | **1** | **26** |

# Distribution of Respondents

## Based On Condition of Employment

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## 5.2 ANSWERING RESEARCH QUESTIONS

The first research question: How do scholars in the natural sciences, social sciences, and humanities differ from each other in the frequency of use of formal and informal sources in general?

To answer this question, question 8 of the questionnaire was provided with nineteen sources of information. The subjects had to answer by indicating the rate of frequency of use of each of these information sources on a Likert - type of scale of 5 to 1 where 5 stands for most frequently used and one for the least used. The means frequencies of using formal and informal sources of information by the three groups of scholars were computed. In order to determine if there was significant differences between the means, one-way ANOVA was used.

The sources of information used by these scholars were differentiated into formal and informal. Since according to Herner (2), scientists recoursed to informal information more while non-scientists to formal sources of information.

The informal sources of information are:

1. Personal contact with colleagues
2. Seminars, workshops, conferences
3. Consulting a reference librarian
4. Exhibitions, concerts, performances

Formal sources have been differentiated as those that are recorded, hence they are:

1. Monographs, Text books
2. Scientific/Scholarly/Technical Journals
3. Abstracts and Indexes
4. Private Information files
5. Microfilm, video, slide and tape programmes
6. Non-academic Journal and Newspaper articles
7. Bibliographies
8. Library Card Catalogues
9. Manufacturers/Publishers catalogues
10. Research Reports
11. Theses/Dissertations
12. Government Publications
13. General Reference Sources
14. Current Awareness Services
15. Computer Information Services

**For means of frequency of use see Appendix D - O.**

In an attempt to assess the use of formal and informal sources, respondents were asked to indicate the frequency with which they utilized information from these sources, in general.

Table 10 below represents the ANOVA summary for the use of informal sources of information in general. The groups of physical scientists, social scientists and humanists did not differ significantly in their use of informal sources in general.

**TABLE 10**

ANOVA summary for Use of Informal Sources of Information in General

N = 86

| SOURCE OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 4,4988 | 2 | 2,2494 | 1,5793* |
| WITHIN GROUPS | 118,2192 | 83 | 1,4243 | |
| **TOTAL** | **122, 718** | **85** | | |

*Not significant at the 0,05 level

See **Appendix D** for means of frequencies

The ANOVA summary, presented in Table 10, shows that the variance ratio (F) 1,5793 under 2 and 83 degrees of freedom, is not significant at the 0,05 level. This illustrates the fact that the groups of natural scientists, social scientists and humanities scholars do not differ significantly in their pattern of use of informal sources of information in general.

When considering the patterns of use of formal sources of information in general, Table 11 shows that the variance ratio (F) 1,8697 under 2 and 83 degree of freedom, is not significant at the 0,05 level.

**TABLE 11**

ANOVA summary for use of formal sources of information in general

N = 86

| SOURCE OFINFORMATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 6, 8268 | 2 | 3, 4134 | 1, 8697* |
| WITHIN GROUPS | 151,5236 | 83 | 1, 8256 | |
| **TOTAL** | **158, 3504** | **85** | | |

* Not significant at the 0, 05 level

Hence, we see that the groups of natural scientists, social scientists and humanities scholars do not differ significantly in their pattern of use of formal sources of information in general.

**The written proposal stage.**

At the written proposal stage the researcher is involved in the writing of a research proposal which has a title, aims and objectives, materials and methods and a brief literature survey. In the literature survey, the researcher has to acquaint himself with all literature dealing with similar or related fields of study, in order to ascertain what has been achieved in the chosen field.

Table 12 and Table 13 present the ANOVA summary of data pertaining to the written proposal stage commencement of a research project. Here, respondents were asked to indicate the frequency of use of information from both informal and formal sources while involved in writing a proposal for a research project.

**TABLE 12**

ANOVA summary for use of Informal Sources of Information
at the Written Proposal Stage
N = 86

| SOURCE OF VARIANCE | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 2, 6161 | 2 | 1, 3081 | 0, 7117 |
| WITHIN GROUPS | 152, 5438 | 83 | 1,8379 | |
| TOTAL | 155, 1599 | 85 | | |

*Not significant at the 0,05 level

The ANOVA summary presented in Table 12 shows a variance ratio (F) 0,7117 under 2 and 83 degrees of freedom, which is not significant at the 0,05 level. This indicates that the groups of natural scientists, social scientists and humanities scholars not differ significantly in their use of informal sources of information when undertaking the written proposal stage of a research project.

TABLE 13

ANOVA summary for use of Formal Sources of Information at the Written Proposal stage.

N = 86

| SOURCE OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 11,5927 | 2 | 5, 7964 | 2, 6853 |
| WITHIN GROUPS | 179,1671 | 83 | 2, 1586 | |
| **TOTAL** | **190,7598** | **85** | | |

*Not significant at the 0.05 level

Upon examination of the Anova summary for the use of formal sources of information by natural scientists, social scientists and humanities scholars (presented in table 13), a variance ratio (F) of 2,6853 under 2 and 83 degrees of freedom was obtained. This value is not significant at the 0,05 level, and hence illustrates that these groups of academics do not differ significantly in their use of formal sources of information at the written proposal stage in a research project.

At the 2nd stage of a research project - the Data collection stage, respondents were required to indicate the frequency with which they utilized both informal and formal sources of information. The ANOVA summaries for these frequencies are presented in tables 14 and 15.

ANOVA summary for use of Informal Sources

of Information at the Data Collection Stage

**TABLE 14**

N = 86

| SOURCE OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 4, 5498 | 2 | 2, 2748 | 1, 2787* |
| WITHIN GROUPS | 147, 6597 | 83 | 1,7790 | |
| TOTAL | 152, 2097 | 85 | | |

*Not significant at the 0,05 level.

The ANOVA summary presented in Table 14 indicates a variance ratio (F) 1,2787 under 83 degrees of freedom. This F value is not significant at the 0,05 level. Thus, we see that the groups of natural scientists, social scientists and humanities scholars do not differ significantly in their use of informal sources of information at the data collection stage in a research project.

TABLE 15

ANOVA summary for use of Formal Sources of

Information at the Data Collection Stage

N = 86

| SOURCES OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 13, 8944 | 2 | 6, 9472 | 3, 4418 |
| WITHIN GROUPS | 167, 5389 | 83 | 2, 0185 | |
| **TOTAL** | **181, 4330** | **85** | | |

*Significant at the 0,05 level

Analysis of the ANOVA summary documented in Table 15 yields a variance ratio (F) 3,4418 under 2 & 83 degrees of freedom, which is significant at the 0.05 level. This shows that natural scientists and humanity scholars differ significantly from each other in their patterns of use of formal sources of information at the data collection stage in a research project.

## TABLE 15 A

Scheffe Procedure For Use of Formal Sources of Information at the Data Collection Stage. The Scheffe procedure, a multiple comparison technique, was carried out to establish exactly where these academics differed in their use of formal sources of information.

N = 86

| Means | | Group 1 | Group 2 | Group 3 |
|---|---|---|---|---|
| 2, 22 | Group 1 (Natural Scientists) | | | |
| 2, 69 | Group 2 (Social Scientists) | | | |
| 3, 27 | Group 3 (Humanists) | * | * | |

* Denotes pairs of groups significantly different at the .05 level

The use of this multiple comparison technique reveals that the frequency means of the three groups were different; only humanists ($\overline{x}$ = 3, 27) differed significantly from natural scientists ($\overline{x}$ = 2,22) and social scientists ($\overline{x}$ = 2,69).

If a significant difference is found between groups of subjects, the Scheffe procedure is normally used to determine where the difference lies and in which way the groups differ from each other.

## Data Analysis Stage

At the 3rd stage of a research project - the Data Analysis Stage, respondents were aksed to indicate the frequencies of use of informal and formal sources of information. These are shown in Tables 16 and 17.

Tabulated in Table 16 is the ANOVA summary of data relating to the patterns of use of informal sources of information, when analysing data while engaged in a research project.

**TABLE 16**

ANOVA summary for use of Informal sources of

Information at the Data Analysis Stage

N = 86

| SOURCES OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GRPUPS | 0, 7685 | 2 | 0, 3842 | 0, 2143* |
| WITHIN GROUPS | 148, 8471 | 83 | 1, 7933 | |
| **TOTAL** | **149, 6156** | **85** | | |

*Not significant at the 0.05 level.

The variance ration (F) 0.2143 under 2 & 83 degree of freedom is not significant at the 0.05 level; illustrating that natural scientists, social scientists and humanities scholars do not differ significantly in their use of informal sources of information, in the data analysis stage of a research project.

TABLE 17

ANOVA summary for use of Formal Sources of Information

at the Data Analysis stag

N = 86

| SOURCE OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 6, 4570 | 2 | 3, 2255 | 1, 5897* |
| WITHIN GROUPS | 169, 2361 | 83 | 2, 0390 | |
| **TOTAL** | **175, 6931** | **85** | | |

Consideration of the use of Journal sources of information by these academics as shown in Table 17 yields a variance ratio (F) 1,5897 under 2 & 83 degree of freedom, which is not significant at the 0,05 level.

This indicates that the groups of natural scientists, social scientists and humanities scholars do not differ significantly form each other in their use of formal sources of information, when analysing data, while engaged in a research project.

## Initiating a Study

In order to gauge whether or not physical scientists, social scientists and humanities scholars differed significantly in their use of informal and formal sources of information, when initiating a study, respondents were asked to indicate the frequency of use of these sources.

These frequencies are tabulated in tables 18 and 19.

**TABLE 18**

ANOVA summary for Use of Informal Source of

Information when Initiating a study

| SOURCES OF VARIANCE | SS | DF | MS | F |
|---|---|---|---|---|
| BETEEN GROUPS | 4, 7079 | 2 | 2, 3539 | 1, 1228* |
| WITHIN GROUPS | 74, 0123 | 83 | 2, 0963 | |
| **TOTAL** | **78, 7202** | **85** | | |

* Not significant at the 0,05 level.

The ANOVA summary (Table 18) presents a variance ratio (F) 1,1228 under 2 & 83 degrees of freedom. This value is not significant at the 0,05 level, indicating that natural scientists, social scientists of humanities scholars do not differ significantly in their use of informal sources of information when initiating a study.

TABLE 19

ANOVA summary for Use of Formal Sources of

Information when Initiating a Study

N = 86

| SOURCES OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 9, 1609 | 2 | 4, 5805 | 2, 1217 |
| WITHIN GROUPS | 179, 1872 | 83 | 2, 1589 | |
| TOTAL | 188, 3501 | 85 | | |

*Not significant at the 0,05 level.

Analysis of the ANOVA summary presented in Table 19 shows a variance ratio (F) 2,1217 under 2 & 83 degrees of freedom, which is not significant at the 0,05 level.

Thus, natural scientists, social scientists and humanities scholars do not seem to differ significantly from each other in their patterns of use of formal sources of information, when initiating a new study.

Respondents were required to indicate the frequencies with which they used informal and formal sources of information when developing a new course. Tables 20 and 21 reveal these frequencies.

TABLE 20

ANOVA summary for Use of Informal Sources of Information

when Developing a New Course

N = 86

| SOURCE OF VARIATION | SS | DF | NS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 5, 9659 | 2 | 2, 9830 | 1, 4155* |
| WITHIN GROUPS | 174, 9175 | 83 | 2, 1074 | |
| **TOTAL** | **180, 8837** | **85** | | |

A variance ratio (F) 1,4155 under 2 and 83 degrees of freedom is not significant at the 0,05 level. This reveals that natural scientists, social scientists or humanities scholars do not appear to differ significantly in their use of informal sources of information when developing a new course.

Consideration of the use of formal sources of information by these academics, when developing a new course shows a ANOVA summary table (Table 21) which reveals variance ratio (f) 3,0751 under 2 or 83 degrees of freedom, each other in their patterns of use of formal sources of information, when developing a new course.

**TABLE 21**

ANOVA summary for Use of Formal Sources of Information

when Developing a new course

N = 86

| SOURCE OF VARIATION | SS | DF | MS | F |
|---|---|---|---|---|
| BETWEEN GROUPS | 12, 9181 | 2 | 6, 4591 | 3, 0751 |
| WITHIN GROUPS | 174, 3341 | 83 | 2, 1004 | |
| **TOTAL** | **187, 2522** | **85** | | |

*Not significant at the 0,05 level.

Table 21 shows a variance ratio (F value) of 3,0751 under 2 and 83 degrees of freedom.

This indicates that the groups of natural scientists, social scientists, social scientists of humanities scholars do not differ significantly in their use of formal sources of information, when developing a new course.

## 5.3 SUMMARY

The results of the data analysis have shown that:

(1) Natural Scientists, social scientists, and humanities scholars at UNITRA do not differ significantly in their use of both informal and formal sources of information in general.

(2) Natural Scientists, social scientists, and humanists do not differ significantly in their use of both informal and formal sources of information at the proposal stage in a research project.

(3) Natural Scientists, social scientists and humanists seem to differ significantly from each other in their use of formal sources of information at the data collection stage.

(4) It was found that the three categories of scholars did not seem to differ in their use of informal sources of information at the data collection stage.

(5) Natural scientists, social scientists and humanists do not differ significantly in their use of both informal and formal sources of information at the data analysis and interpretation stage.

(6) Natural scientists, social scientists and humanists do not seem to differ significantly in their use of both informal and formal sources of information when initiating a study.

(7) Finally, the natural scientists, social scientists and humanists appear to differ, although not so significantly, in their use of information when developing a new course. In this case, the F value being 3,0751 which is very close to 3, 15, which is considered a significant value.

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# CHAPTER 6

## SUMMARY OF FINDINGS, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER STUDY

The main aim of this study was to investigate the information seeking patterns of the natural scientists, social scientists, humanities scholars at the University of Transkei in their general quest for information as well as the three stages of a research project, i.e., proposal stage, data collecting stage and data analysis stage. The study also aimed at investigating the information seeking patterns when initiating a study and when developing a new course.

To achieve the intended purpose of the study, three research questions were posed. They were:

1. How do scholars in the natural sciences, social sciences and the humanities differ from each other in their search and use of formal and informal sources in general?

2. How do scholars in the natural sciences, social sciences and humanities differ from each other in their search and use of the formal and informal sources of information at each of the three stages in a research:- project, i.e., proposal stage, data collection stage and data analysis stage?

3. How do scholars in the natural sciences, social sciences and humanities differ from each other in their use of information when initiating a study and when developing a new course?

The data required for this study was collected from eighty six respondents using a self-administered questionnaire. The first part of the questionnaire was intended to gather information on research and teaching of the academics, their rank, their experience on teaching and research and the way they divided their time between teaching and research. They were also required to show the type of contract they had with the university to see if that in any way affected their approach to research.

The second part of the questionnaire (question 8) dealt with the general use of information by respondents within the three faculties. The respondents were presented with a list of 19 sources of information. Using a Likert type of Scale of 5 to 1, they were required to indicate their frequency of use of each. Data collected was then used to answer the first research question.

The third part of the questionnaire (question 9) was meant to provide information for the question on how frequently information was used by the scholars during the three stages of a research project. These stages were the proposal stage, data collection stage and data analysis stage. The last part of the questionnaire provided information on the method and use of various sources when initiating a study and developing a new course.

The data collected was analyzed using descriptive statistics for the first part and one way ANOVA and Scheffe in the second part.

## 6.1 SUMMARY OF FINDINGS

This section presents a summary of study findings with respect to the respondents' characteristics and answers to the research questions presented earlier.

## 6.2 CHARACTERISTICS OF RESPONDENTS

Out of 144 respondents who were given the questionnaire, only 86 of them completed the questionnaires and returned them. Of these 86 respondents, 29 or 33.7% were natural scientists, 35 or 40% social scientists, and 22 or 25.6% humanists. Among natural scientists 65.5% indicated that they were involved in research. The proportion among the social scientists who did research reached up to 71.1%, but only 59% of the humanists reported doing any kind of research. With regard to teaching, 89.7% of natural scientists agreed that they were involved in teaching, 88.6% of social scientists and 95.5% of the humanists also indicated their commitment to teaching. In relation to the way respondents divided their time between research and teaching, 6.9% of natural scientists indicated that they spend more time on research than teaching, while 51.7% reported that they devote more time in teaching than in research, and

41.4% agreed that they spend an equal amount of time on research and teaching. The situation is respectively 2.9%, 71.4% and 25.7% among the social scientists and 13.6%, 77,3% and 9.1% among humanists.

On analysing the academic rank of respondents among the natural scientists were: five or 17.2% professors, four or 13.8% associate professors, 13 or 44.8% senior lecturers and two or 24.1% lecturers. Among the social scientists, the rank order are, three or 8.6% professors, three or 8.6% associate professors, eleven or 31.4% senior lecturers and eighteen or 51.42% lecturers. Among the humanists there are one or 4.5% professors, two or 9% associate professors, eight or 36% senior lecturers and eleven or 50% lecturers.

Finally, the distribution of respondents according to conditions of employment showed that 14 out of 29 natural scientists have permanent employment, while 15 are on contract. Among the social scientists, 25 out of 35 are on permanent basis, and nine on contract. Twenty out of 22 humanists have permanent employment and only 2 are on contract.

Summary of findings to Questions 8, 9 and 10. The findings related to Research Questions were:

(1) The information seeking behaviour of scholars in the faculty of natural sciences, social sciences and humanities do not differ in their use of informal sources of information in general.

(2) The scholars in the natural sciences, social sciences and the humanities do not differ in their use of formal sources of information in general.

(3) These findings have answered the first research question, that the natural scientists, social scientists and humanists do not differ in their use of either formal or informal sources of information in general.

Research Question two:

(1) According to the findings of this study, the natural scientists, social scientists and humanities did not show any difference in their use of formal and informal sources of information at the proposal stage in a research project.

(2) Natural scientists, social scientists and humanists seem to differ significantly from each other in their use of formal sources of information at the data collection stage. Although they do not appear to differ in their use of informal sources of information at this stage.

(3) Natural scientists, Social Scientists and humanists did not show any difference in their use of both formal and informal sources of information at the data analysis and interpretation stage.

Research Question three:

With regard to question three, the findings were as follows:

(1) Natural scientists, social scientists, and humanists did not seem to differ significantly in their use of both formal and informal sources of information when initiating a study.

(2) Natural scientists, social scientists and humanities did not differ significantly in their use of both formal and informal sources of information when developing a new course.

## 6.3 CONCLUSION

This study attempted to compare the use of formal and informal sources of information by the academics of the three major faculties of Natural Sciences; Social Sciences; and Humanities. But the findings obtained through the study pointed out high use of informal sources of information by humanists in comparison to scientists which was contrary to previous beliefs. It was an understood fact that natural scientists used more informal sources of information as they wished to gain up-to-date information about the latest discoveries. This result was most unexpected as the belief

was that natural scientists had a well organised informal system of communication (invisible college) (1), and that the humanists preferred to work alone. The only possible interpretation that could be drawn out of these findings is that humanists, who belong to the departments of arts, drama and travelling theatres, music etc. organise and attend concerts, performances, competitions, and exhibitions, which provide great opportunities for informal contact and sources of information,

Natural scientists, in this part of the world, who do not receive this kind of exposure, may choose to refer to formal sources of information more than to informal ones.

Another important finding of this study is the heavy use of scientific journals and hence the importance of journals to natural scientists, social scientists and humanities. According to previous studies conducted, natural scientists and social scientists made very good use of journal articles to keep up to date with current information. The present study also agrees with the previous findings of Debons, Davis and Gehlerts (2) where informal personal contact is very valuable to Humanities. The difference in the present study is that the humanists too showed an affinity in the use of journals.

Personal information files were found to be used heavily by both scientists and social scientists, but not to such a great extent by the humanities scholars. This could be due to the academic rank. Among the humanists who responded, there was only one professor out of 22 and 17 were lectures. This clearly indicated that most of the respondents were still in the process of creating their own files. This could also be

attributed to the fact that humanists relied on library related sources more than natural scientists. This finding supported the earlier findings of humanists as heavy users of library material (3).

The results of this study also showed a high usage of library catalogues by the humanists compared to that of natural scientists and social scientists. This again supported the previous findings that the humanists did the searching themselves and not delegate the literature searches to others. The reasons for this kind of behaviour could be attributed to the lack of funds available for humanists research and hence the scarcity of assistants who would do the search for them, this is not the case with scientists, who have both field and research assistants. The humanists also made heavy use of bibliographies unlike the two other groups of academics. Scientists make use of journals and current contents for latest discoveries, but humanists' research work is based on the past or the history of events, peoples and places.

Previous studies found that the humanities did not use computers extensively in meeting their information needs. This, according to Stone (4), was because humanists found it more useful consulting non-current materials as they needed to go back to original documents. Humanities scholars also needed older materials to build on a previous body of knowledge, as well as for comparative purposes. But the present study proved that humanists used computers with equal frequency as natural scientists and social scientists. The explanation that may be drawn from this finding may be that the humanists need computers for processing their data and storing it or

it may be a channel of communication with others in the same field through the electronic mail. They may also be searching for bibliographic information through SABINET.

An intriguing finding of the present study is the high use of journals by respondents in the data collection stage, more especially by the humanists. A possible explanation for this new approach to the use of journals at the data collection stage may be because journals provide new ideas that are relevant for new research. The findings of this study also point out that the approach of humanities towards the usage of various information sources have changed. These findings also reiterate the assumption advanced by Chen and Hernon that: "individuals find themselves in situation where they must make a decision, answer a question, locate a fact, solve a problem or understand something" (5).

One of the interesting findings of this study is that the heavy use of formal sources by humanists is in accord with the previous studies. Both Goldhor (6) and Wintrauch (7) agreed on this conclusion.

The comparison of the information seeking patterns of the natural scientists, social scientists and humanities show no overriding differences between the three groups. They use similar sources but the extent of usage of a source and stage at which a particular characteristic may be employed may differ. This study has brought out a remarkable degree of homogeneity between the information seeking patterns of natural scientists, social scientists and to a certain degree with that of humanities

scholars. These findings therefore confirm the broad conclusions of previous studies by Garvey (8) and Skelton (9) that there are no major differences in the information seeking patterns of social scientists and natural scientists, although there are differences in emphasis. It is also interesting to note that neither are there major differences in the perceptions of those activities between the three groups.

## 6.4 IMPLICATIONS OF THE STUDY

The findings of this study led to the following logical implications.

It was found that the humanists do not differ in their use of informal sources of information from that of natural scientists and social scientists. This differs from previous studies, where the humanists were shown to use mostly formal sources to satisfy their information needs. This finding was supported by Steig (10), Stone (11), Garfield (12) and Kumar (13). The findings of this study must therefore be considered when designing or renewing the information systems at UNITRA.

One of the major findings of this study pointed to the fact that humanities scholars use formal sources of information to a greater extent at the data collection stage compared to natural scientists and social scientists. This could be attributed to their lack of knowledge concerning all available sources of information in the library. In the absence of a reference librarian at UNITRA, members of various faculties are at a loss in obtaining adequate guidance concerning sources of information. Library

instruction at UNITRA campusis still underdeveloped. It is therefore of atmost importance for the library to be able to assess the needs of the academic and research staff, so that it can then possible define useful activities which will meet the needs of its clientele.

1. The University of Transkei library should develop library awareness programmes and should publicize their services to all the members of the University. This might require for the library staff to be willing and ready to help at all times.

2. It is advisable to make provision for the staff to browse through new books and journals on display before they are shelved.

3. UNITRA library needs a full-time, qualified reference librarian who could guide and offer positive help to the University community. As there are no departmental libraries at UNITRA, the staff depend entirely on the resources of the main library. Several respondents felt that a qualified librarian should be available at the various access points.

4. One of the important roles of the library is to provide up-to-date information to the various categories of staff members according their needs. Hence, this should be treated as one of the priorities of the UNITRA RAP to revitalise and improve library services to the academic community.

5. The library staff need to evaluate the present collection to see whether it is supportive of and meets the needs of its users, especially the academic and research staff. As this researcher believes, the library collection is insufficient to meet the needs of the academic community within the university. The library needs to make a concerted effort to obtain and provide information sources that are relevant to each department.

Haffajee stressed the need and importance of accessibility and ease of use of sources (14). It is here that the prominence of the university library comes into play, in its important function of organizing a systematic and comprehensive acquisition of all forms of literature both published and unpublished for the benefit of the staff. It also has the responsibility of educating its clientele about the various available sources of information and how to retrieve them. The university library will fail in its duty if it exists only as a repository of knowledge and not as an agent of true vision and enlightment.

The findings of Bell (15) and Zondi (16) were similar to the present study findings in that they found a lack of skill in the use of library facilities was an obstacle in obtaining appropriate information. Hence user education for all library users is a necessity.

## 6.5 SUGGESTIONS FOR FURTHER STUDY

1. Further research of this nature could be conducted in more than one institution so that the results could be compared to see if the use of particular sources of information by a group of scholars is typical of that institution.

2. The UNITRA Librarian's report 93-94 shows that the student book ratio here is the lowest among South African universities. The same can be applied when it comes to the information needs of the staff. In the light of such revelations, it is imperative for the library policy makers to have a collection evaluation done on an annual basis. This would enable the library staff to find the weak spots in the library as far as information deficiency is concerned and these can then be rectified.

(3) The study showed a low usage of computer information services by the respondents in general. The reasons could be either that the staff are unaware of the programmes available or a lack of familiarity with the computer. It is therefore of value to inform the academic staff of any new software that are available and to have formalised structured instruction for the staff.

(4) The study findings show that the academic staff make very little use of the reference librarian. The speculations are that the academic staff feel that they get very little help from the librarian. The reference librarian on the other hand

feels inadequately equipped to meet the needs of the academic staff. The library policy makers need to take into consideration the relevance of the on-going library training for the junior staff so that they feel equal with the academic staff when solving an information need.

(5) It is worthwhile to study the usefulness of CD-Rom in the library. CD-Rom provides an ideal vehicle for training both library and information professionals and end users in the techniques of information searching. Structured exercises can be provided to highlight the problems and possibilities of the searching process. CD-Rom can be utilized along with other reference materials to help answer reference questions and to identify citations, thus making the CD-Rom database one component of the library's information resources.

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University of Transkei

Private Bag X1 UNITRA Umtata Transkei Southern Africa
Telephone: (0471) 302 2111 - Fax: (0471) 26820/25747 - Tel. Add.: UNITRA - Telex: 734TT

APPENDIX A

Reference No.:

Dr. Abdelmajid Bouzza
Moghrane 1121
Zaghouan
TUNISIA

27 September 1993

Dear Dr. Bouzza

PERMISSION TO USE YOUR QUESTIONNAIRE FOR A RESEARCH

I hope, by now, you will have received a letter of introduction from Dr.Kaniki, University of Natal, Pietermaritzburg, on my behalf. I am a member of the staff at the University of Transkei doing a Master's programme in Library Science under Dr.Kaniki.

While discussing the topic for my Master's project, Dr.Kaniki mentioned your work and spoke very highly of it. He suggested that I should do a project similar to what you had done. Hence, THE INFORMATION SEEKING PATTERN OF SCIENTISTS, SOCIAL SCIENTISTS, AND HUMANISTS AT THE UNIVERSITY OF TRANSKEI has been chosen as the subject for my research project.

Dr.Bouzza, may I seek your kind permission to use your questionnaire as my research instrument? I may have to alter it slightly to suit my project. Your contribution will be duly acknowledged.

Thanking you in anticipation,

Yours sincerely

Jacobs

DAISY JACOBS (MRS)
DEPARTMENT OF CHEMISTRY

**APPENDIX B**

University of Natal
Information Studies
P.O. Box 375 Pietermaritzburg 3200 South Africa
Telephone (0331) 955007 Fax (0331) 955599
Telegrams University Telex 643719

10 March 1994

Dear Sir/Madam

Under the auspices of the Department of Information Studies, University of Natal, I am conducting a study on the use of information sources by physical scientists, social scientists and humanities scholars at the University of Transkei, which is my dissertation topic. This study is required by the University for the degree of Master of Library and Information Science.

I would particularly like to obtain your responses because your experience in using the sources of information will contribute significantly towards solving some of the problems policy makers face in this important area of information science. The enclosed instrument has been tested and revised in order to obtain all the necessary data while requiring a minimum of your time.

It will be appreciated if you will complete the enclosed form and return it to me at your earliest convenience, ideally before 25 March 1994. Other phases of this research cannot be carried out until analysis of the survey data is completed. Any comments that you may have concerning the instrument will be appreciated.

Your responses will be held in the strictest confidence and destroyed immediately following the data analysis. I will be pleased to send a summary of the survey results if you so wish.

Thanking you for your co-operation,

Yours Sincerely

Jacobs

DAISY JACOBS
Department of Chemistry
University of Transkei

APPENDIX C

QUESTIONNAIRE

1. What is your (1) department, and (2) specialization?

   (1) ..... (2) .....

2. Are you presently engaged in any research project? .... Yes ..... No (a research project is any sustained investigation to explore new ideas or develop new knowledge whether empirical, qualitative or literary.)

3. Are you presently teaching any course(s)? ....Yes .....No.

4. If you are engaged in both research and teaching, how do you divide your time? (Please check only one)

   ..... More time in research than teaching.

   ..... More time in teaching than research.

   ..... Equal amount of time in research and teaching.

5. What is your present academic rank?

   ..... Professor
   ..... Associate Professor
   ..... Senior Lecturer
   ..... Lecturer
   ..... Others, please specify.....
   .....

6. How long have you been teaching (college or above) and/or conducting research?

   a. Teaching ..... year(s)
   b. Research ..... year(s)

7. What is the category of your appointment?

   Permanent .....
   Temporary .....
   Contract .....

8. How frequently do you use each of the following sources of information for academic work? Please rate each source of information 5-1 where:

   5 = Very frequently used
   4 = Frequently used
   3 = Occasionally used
   2 = Rarely used
   1 = Never used

| Sources of Information | Frequency of Use in General<br>Please circle the frequency number that best represents your use of the information sources listed at the left. | | | | |
|---|---|---|---|---|---|
| *Scientific/scholarly/ technical journals | 5 | 4 | 3 | 2 | 1 |
| *Personal contact with colleagues (through visits, telephone calls correspondence, etc.) | 5 | 4 | 3 | 2 | 1 |
| *Monographs, Textbooks | 5 | 4 | 3 | 2 | 1 |
| *Seminars, Workshops, Conference | 5 | 4 | 3 | 2 | 1 |
| *Personal information files | 5 | 4 | 3 | 2 | 1 |
| *Abstracts and Indexes | 5 | 4 | 3 | 2 | 1 |
| *Consulting a Reference Librarian subject Librarian | 5 | 4 | 3 | 2 | 1 |
| *Exhibitions/Concerts/Performances | 5 | 4 | 3 | 2 | 1 |
| *Microfilm, Video, Slide and Tape Programs | 5 | 4 | 3 | 2 | 1 |
| *Non-Academic Journal and Newspaper Articles | 5 | 4 | 3 | 2 | 1 |
| *Bibliographies | 5 | 4 | 3 | 2 | 1 |
| *Manufacturers/Publishers Catalogues | 5 | 4 | 3 | 2 | 1 |
| *Library Catalogue | 5 | 4 | 3 | 2 | 1 |
| *Research Reports | 5 | 4 | 3 | 2 | 1 |
| *Theses/dissertations | 5 | 4 | 3 | 2 | 1 |
| *Government Publications | 5 | 4 | 3 | 2 | 1 |
| *General Reference Sources (encyclopedias and dictionaries) | 5 | 4 | 3 | 2 | 1 |
| *Current Awareness Services (e.g., current contents, library alerting service of new journals and publications) | 5 | 4 | 3 | 2 | 1 |
| *Computer Information Services | 5 | 4 | 3 | 2 | 1 |
| *Others, Please specify _____ | 5 | 4 | 3 | 2 | 1 |

9. When researchers conduct research projects, they generally go through three common stages ((1) Writing a proposal, (2) Collecting data/information, and (3) Analyzing data/ information); how frequently do you use the starred sources of information at each of these stages?

Please rate each application 5 to 1 where:

5 = Very frequent application
4 = Frequent application
3 = Occasional application
2 = Rare application
1 = Never applied

| Sources of Information | Frequency of Use When Performing research activities<br>Please circle the frequency number that best represents your use of the information sources listed at the left when you perform any of the three below research activities. | | |
|---|---|---|---|
| | Writing a Research Proposal | Collecting Data/info | Analyzing Data/Info |
| *Scientific/scholarly technical journals | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Personal Contact with Colleagues (through visits, telephone calls, correspondence, etc.) | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Monographs, Textbooks | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Seminars, Workshops, Conferences | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Personal information files | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Abstracts and Indexes | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Consulting a Reference Librarian/subject librarian | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Exhibitions/Concerts/ Performances | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |

| Sources of Information | Frequency of Use When performing research activities<br>Please circle the frequency number that best represents your use of the information sources listed at the left when you perform any of the three below activities. | | |
|---|---|---|---|
| | Writing a Research Proposal | Collecting Data/Info | Analyzing Data/Info |
| *Microfilm, Video, Slide and Tape Programs | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Non-Academic Journals and Newspaper Articles | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Bibliographies | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Manufacturers/Publishers Catalogues | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 |
| *Library Catalogue | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 |
| *Research Reports | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Theses/dissertations | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Government Publications | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *General Reference Sources (encyclopedias and dictionaries) | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Current Awareness Services (e.g., current contents, library alerting service of new journals and publications) | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Computer Information Services | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |
| *Others, Please specify. ..... | 5 4 3 2 1 | 5 4 3 2 1 | 5 4 3 2 1 |

10. Suppose that you are initiating a new study or developing a new course; how often do you use the starred sources of information below?

    Please rate each application 5 to 1 where:

    5 - Very frequent application
    4 - Frequent application
    3 - Occasional application
    2 - Rare application
    1 - Never applied

| Sources of Information | Frequency of Use When initiating a new study of developing a new course<br><br>Please circle the frequency number that best represents your use of the information sources listed at the left. | |
|---|---|---|
| | Initiating a New Study | Developing a New Course |
| *Scientific/scholarly/ technical journals | 5 4 3 2 1 | 5 4 3 2 1 |
| *Personal Contact with Colleagues (through visits, telephone calls, correspondence, etc. | 5 4 3 2 1 | 5 4 3 2 1 |
| *Monographs, Textbooks | 5 4 3 2 1 | 5 4 3 2 1 |
| *Seminars, Workshops, Conferences | 5 4 3 2 1 | 5 4 3 2 1 |
| *Personal information files | 5 4 3 2 1 | 5 4 3 2 1 |
| *Abstract and Indexes | 5 4 3 2 1 | 5 4 3 2 1 |
| *Consulting a Reference Librarian/subject Librarian | 5 4 3 2 1 | 5 4 3 2 1 |
| *Exhibitions/Concerts/ Performances | 5 4 3 2 1 | 5 4 3 2 1 |
| *Microfilm, Video, Slide and Tape Programs | 5 4 3 2 1 | 5 4 3 2 1 |
| *Non-Academic Journals and Newspaper Articles | 5 4 3 2 1 | 5 4 3 2 1 |

| Sources of Information | Frequency of Use When initiating a new study or developing a new course<br><br>Please circle the frequency number that best represent your use of the information sources listed at the left. | |
|---|---|---|
| *Bibliographies | 5 4 3 2 1 | 5 4 3 2 1 |
| *Manufacturers/Publishers Catalogues | 5 4 3 2 1 | 5 4 3 2 1 |
| *Library Catalogue | 5 4 3 2 1 | 5 4 3 2 1 |
| *Research Reports | 5 4 3 2 1 | 5 4 3 2 1 |
| *Theses/dissertation | 5 4 3 2 1 | 5 4 3 2 1 |
| *Government Publications | 5 4 3 2 1 | 5 4 3 2 1 |
| *General Reference Sources (encyclopedias and dictionaries) | 5 4 3 2 1 | 5 4 3 2 1 |
| *Current Awareness Services (e.g., current contents, library alerting service of new journals and publications) | 5 4 3 2 1 | 5 4 3 2 1 |
| *Computer Information Services | 5 4 3 2 1 | 5 4 3 2 1 |
| *Others, Please specify _____ | 5 4 3 2 1 | 5 4 3 2 1 |

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11. Do you desire a summary of the survey results?

----------YES ----------NO

12. Please write any comments you may have concerning this study.

Thank you for your cooperation.

## APPENDIX D

Means of Frequency of Use of Informal Sources of Information in General by Natural Scientists, Social Scientists and Humanist

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Personal Contact | 3.10 | 3.37 | 3.60 |
| *Seminar, Workshops, Conferences | 2.83 | 3.09 | 3.18 |
| *Consulting a Reference Librarian | 1.79 | 2.6 | 2.78 |
| *Exhibitions/ Concerts/ Performances | 1.52 | 1.86 | 1 |

## APPENDIX E

Means of Frequency of Use of Formal sources of Information in General by Natural Scientists, Social Scientists, and Humanists

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Scientific/ scholarly/ technical journals | 4.34 | 4.34 | 4.18 |
| *Monographs/ textbooks | 4.20 | 4.37 | 4.55 |
| *Personal information file | 2.28 | 3.06 | 3.14 |
| *Abstracts and Indexes | 2.55 | 2.94 | 3.22 |
| *Microfilm, Video, Slide and Tape Programs | 2.10 | 2.42 | 2.59 |
| *Non-Academic Journals and Newspaper Articles | 2.58 | 3.37 | 3.36 |
| *Bibliographies | 2.10 | 3.29 | 3.36 |
| *Manufacturers/ Publishers Catalogues | 3.14 | 3.00 | 3.64 |
| *Library Catalog | 2.83 | 3.6 | 3.86 |

(Appendix E continued)

| Information Source | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Research Reports | 3.07 | 3.66 | 3.95 |
| *Theses/ Dissertations | 2.45 | 3.34 | 3.63 |
| *Government Publications | 1.79 | 2.9 | 2.55 |
| *General Reference Sources | 2.31 | 2.97 | 3.55 |
| *Current Awareness Services | 2.9 | 2.86 | 3.36 |
| *Computer Information Services | 2.66 | 2.74 | 2.68 |

## APPENDIX F

Means of Frequency of use of Informal Sources of Information
By Natural Scientists, Social Scientists, and Humanists
at the Proposal Stage

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Personal Contact | 2.93 | 3.09 | 3.32 |
| *Seminars, Workshops, Conferences | 3.14 | 2.77 | 3.14 |
| *Consulting a Reference Librarian | 2.17 | 2.94 | 3.18 |
| *Exhibitions/ Concerts/ Performances | 1.27 | 1.74 | 1.18 |

## APPENDIX G

Means of Frequency of use of Formal Sources of Information
By Natural Scientists, Social Scientists, and Humanists
at the Proposal Stage
N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Scientific/ Scholarly Technical Journals | 4.38 | 4.31 | 4.27 |
| *Monographs/ Textbooks | 3.69 | 4.14 | 4.10 |
| *Personal Information Files | 2.59 | 3.2 | 3.15 |
| *Abstracts and Indexes | 3.52 | 3.03 | 3.59 |
| *Microfilm Video, Slide and Tape Programs | 1.55 | 2.37 | 1.95 |
| *No-Academic Journals and Newspaper Articles | 1.72 | 3.00 | 3.05 |
| *Bibliographies | 2.24 | 3.14 | 3.72 |
| *Manufacturers/ Publishers Catalogues | 1.72 | 2.69 | 3.00 |
| *Library Catalog | 2.24 | 3.57 | 4.23 |
| *Research Reports | 3.41 | 3.83 | 4.32 |

**Appendix G continued**

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Theses/ Disserta-tion | 2.41 | 3.34 | 3.68 |
| *Government Publications | 1.52 | 2.63 | 2.50 |
| *General Reference Courses | 2.16 | 3.00 | 3.91 |
| *Current Awareness Services | 2.90 | 3.14 | 3.73 |
| *Computer Information Services | 2.62 | 2.7 | 3.10 |

## APPENDIX H

Means of Frequency of Use of Informal Sources of Information
By Natural Scientists, Social Scientists, and Humanists
at the Data Collection Stage

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Personal Contact | 2.76 | 3.10 | 3.50 |
| *Seminar, Workshops, Conferences | 2.55 | 2.66 | 3.14 |
| *Consulting a Reference Librarian | 2.14 | 2.51 | 2.68 |
| *Exhibitions/ Concerts/ Performances | 1.28 | 1.54 | 1.8 |

## APPENDIX I

Means of Frequency of Use of Formal Sources of Information
By Natural Scientists, Social Scientists, Humanists
at the Data Collection Stage

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Scientific/ Scholarly/ Technical Journals | 3.59 | 3.14 | 4.14 |
| *Monographs/ Textbooks | 2.93 | 2.23 | 3.77 |
| *Personal Information Files | 2.41 | 2.94 | 3.05 |
| *Abstracts and Indexes | 2.76 | 2.23 | 2.95 |
| *Microfilm, Video, Slide and Tape Programs | 1.45 | 2.11 | 2.09 |
| *No-Academic Journals and Newspaper Articles | 1.59 | 2.43 | 3.14 |
| *Bibliographies | 1.93 | 2.80 | 3.22 |
| *Manufacturers/ Publishers Catalogues | 1.34 | 2.37 | 2.86 |
| *Library Catalog | 2.00 | 2.29 | 3.68 |
| *Research Reports | 3.10 | 3.11 | 4.14 |

**Appendix I continued**

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Theses/ Dissertation | 2.41 | 3.34 | 3.68 |
| *Government Publications | 1.38 | 2.66 | 2.45 |
| *General Reference Courses | 1.60 | 2.54 | 3.5 |
| *Current Awareness Services | 2.45 | 2.86 | 3.60 |
| *Computer Information Services | 2.14 | 2.46 | 3.14 |

## APPENDIX J

Means of Frequency of Use of Informal Sources Of Information
By Natural Sciences, Social Scientists, Humanists
at the Data Analysis and Interpretation State

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Personal Contact | 3.00 | 3.10 | 2.77 |
| *Seminars, Workshop, Conferences | 2.59 | 2.46 | 2.68 |
| *Consulting a Reference Librarian | 2.10 | 2.23 | 2.68 |
| *Exhibitions/ Concerts/ Performances | 1.14 | 1.51 | 1.68 |

## APPENDIX K

Means of Frequency of Use of Formal Sources of Information
By Natural Scientists, Social Scientists, and Humanists
at the Data Analysis and Interpretation Stage
N = 86

| Information Sources | Natural Scientists Mean | Rank | Social Scientists Mean | Rank | Humanists Mean | Rank |
|---|---|---|---|---|---|---|
| *Scientific/ Scholarly/ Technical Journal | 3.97 | | 3.54 | | 3.77 | |
| *Monographs/ Textbooks | 2.59 | | 2.46 | | 2.68 | |
| *Personal Information Files | 2.28 | | 2.71 | | 2.86 | |
| *Abstracts and Indexes | 2.93 | | 2.63 | | 2.82 | |
| *Microfilm Video, Slide and Tape Programs | 1.38 | | 2.09 | | 1.81 | |
| *No-Academic Journal and Newspaper Articles | 1.31 | | 2.46 | | 2.59 | |
| *Bibliographies | 2.17 | | 2.54 | | 2.86 | |
| *Manufacturers/ Publishers Catalogues | 1.59 | | 2.46 | | 2.59 | |
| *Library Catalog | 1.90 | | 2.74 | | 3.00 | |
| *Research Reports | 2.97 | | 3.11 | | 3. | |

**Appendix K continued**

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Theses/ Dissertation | 2.14 | 3.00 | 3.23 |
| *Government Publication | 1.38 | 2.63 | 2.27 |
| *General Reference Courses | 2.16 | 3.00 | 3.19 |
| *Current Awareness Services | 2.38 | 2.89 | 3.23 |
| *Computer Information Services | 2.38 | 2.66 | 2.86 |

## APPENDIX L

Means of Frequency of Use of Informal Sources of Information
By Natural Scientists, Social Scientists, and Humanists
When Initiating a Study

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Personal Contact | 3.72 | 3.66 | 3.86 |
| *Seminars, Workshops, Conferences | 3.38 | 3.17 | 3.55 |
| *Consulting a Reference Librarian | 1.93 | 2.83 | 3.59 |
| *Exhibitions/ Concerts/ Performances | 1.66 | 1.94 | 2.14 |

## APPENDIX M

Means of Frequency of Use of Formal Sources of Information by Natural Scientists, Social Scientists and Humanists, When Initiating a Study

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Scientific/ Scholarly Technical Journals | 4.21 | 4.31 | 4.55 |
| *Monographs/ Textbooks | 3.97 | 4.43 | 4.32 |
| *Personal Information Files | 2.83 | 3.34 | 3.18 |
| *Abstracts and Indexes | 3.10 | 3.06 | 3.77 |
| *Microfilm, Video, Slide and Tape Programs | 1.86 | 2.37 | 2.27 |
| *No-Academic Journals and Newspapers Articles | 1.93 | 3.11 | 2.95 |
| *Bibliographies | 2.66 | 3.82 | 4.18 |
| *Manufacturers/ Publisher Catalogues | 2.76 | 3.03 | 3.68 |
| *Library Catalog | 2.59 | 3.83 | 4.14 |
| *Research Reports | 3.38 | 3.78 | 4.0 |

**Appendix M. continued**

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Theses/ Dissertation | 2.79 | 3.37 | 4.09 |
| *Government Publications | 1.48 | 2.66 | 2.40 |
| *General Reference Courses | 2.52 | 2.94 | 3.95 |
| *Current Awareness Services | 2.97 | 3.26 | 4.00 |
| *Computer Information Services | 2.69 | 2.80 | 2.38 |

## APPENDIX N

Means of Frequency of Use of Informal Sources of Information
By Natural Scientists, Social Scientists, and Humanists
When Developing a New Course

N = 86

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Personal Contact | 3.72 | 3.71 | 3.91 |
| *Seminars, Workshops, Conferences | 3.00 | 2.94 | 3.50 |
| *Consulting a Reference Librarian | 1.93 | 2.66 | 2.14 |
| *Exhibitions/ Concerts/ Performances | 1.55 | 1.86 | 2.05 |

## APPENDIX O

Means of Frequency of Use of Formal Sources of Information
By Physical Scientists, Social Scientists, and Humanists
When Developing a Course

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Scientific/ Scholarly/ Technical Journal | 3.41 | 3.94 | 4.50 |
| *Monographs/ Textbooks | 4.21 | 4.43 | 4.41 |
| *Personal Information Files | 2.66 | 3.23 | 3.18 |
| *Abstracts and Indexes | 3.07 | 3.00 | 3.64 |
| *Microfilm, Video, Slide and Tape Program | 1.97 | 2.14 | 2.23 |
| *No-Academic Journals and Newspaper Articles | 2.34 | 3.49 | 4.05 |
| *Manufacturers/ Publishers Catalog | 2.59 | 2.89 | 3.64 |
| *Library Catalog | 2.31 | 3.54 | 3.90 |
| *Research Reports | 2.55 | 3.29 | 3.95 |

**Appendix O continued**

| Information Sources | Natural Scientists Mean | Social Scientists Mean | Humanists Mean |
|---|---|---|---|
| *Theses/ Dissertation | 2.20 | 2.94 | 3.77 |
| *Government Publication | 1.45 | 2.29 | 2.23 |
| *General Reference Courses | 2.31 | 2.54 | 3.86 |
| *Current Awareness Services | 2.31 | 3.09 | 3.95 |
| *Computer Information Services | 2.34 | 2.49 | 2.09 |

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