INVESTIGATING INFORMATION SEEKING BEHAVIOR USING THE CONCEPT OF SONNENWALD'S INFORMATION HORIZONS: AN EXAMPLE FROM A STUDY OF UNDERGRADUATE STUDENTS IN KARNATAKA

Dr. Mahesh G T*

Librarian, Government First Grade College, Saligrama Mysore, Karnataka, India

Dr. Ramanik S. Lengure

Librarian, Renuka College, Besa, Nagpur, Maharashtra, India

Dr. Shradda Anilkumar Naidu

Principal, Dayanand Arya Kanya Mahavidyalaya, Nagpur, India

*Corresponding Author

ABSTRACT

This research paper explores the patterns of library use and information seeking by the undergraduate students in a select government first grade college of Mysore District. Data was gathered using the survey questionnaire method by randomly selecting the students. The main objective of the study is to understand the usage of library and also to identify their awareness of library and information services available to them. The study analyzed empirical data collected on the information needs of undergraduate students. Data collected from 317 students through open questionnaire. Findings of the study recommend that assistance in the utilization of library resources and services is very much necessary. It is observed from the study that 89% of the students were in need of academic and examination-oriented information, the results of the study showed that 81.39% of the students always visit the library to borrow books and other reading materials, and 85.17% students always visit the library seeking information to prepare for academic examinations. 64% respondents were happy and felt good about the library and information resources, and majority of the students were merely relied on print materials when compared to online and other e-resources. Study revealed that majority of the respondents relied much on text type materials and hardly referred the reference books. Most of the students visited the library to borrow books and refer the previous year's question papers on the other hand few students also

visited to check OPAC and browse the online resources on N-List. They put forwarded the point that they need more training and guidance on how to use their library sources and services for additional productivity and excellency and to institute a library services patron group. On the basis of findings, few suggestions have recommended in this study to augment user's satisfaction from libraries.

Key Words: Academic achievement, Adolescents, Self esteem, academic achievement

Cite this Article: Mahesh G T, Ramanik S. Lengure, Shradda Anilkumar Naidu, Investigating Information Seeking Behavior Using the Concept of Sonnenwald's Information Horizons: An Example from a Study of Undergraduate Students in Karnataka, *International Journal of Management*, 11(12), 2020, pp 3439-3456.
<https://iaeme.com/Home/issue/IJM?Volume=11&Issue=12>

1. INTRODUCTION

Generally speaking, undergraduate students have a variety of information sources and information literacy needs. Information seeking behaviour of a student is considered as behaviour in quest of information in a purposeful way to bridge that information gap.

The study of Information Seeking Behaviour has become very much significant in bridging the information gap between the potential of the users from the information systems and the accessible library and information services. A variety of factors are responsible for determining the Information Seeking Behaviour of an undergraduate student or any student community. The rationale for which the information is required and the situation in which it is going to be utilized are imperative for understanding the Information Seeking Behaviour of the students. These students exhibit a variety of behaviour in search of information and utilizing the information resources such as text books, reference books, journal articles, newspaper information to finish off the classroom tests and assignments, though, they are characteristically find the way well portrayed, published information through their college libraries and are not trying to trace the information that is generated with in the institution with inconsistent or non- existence of metadata that may have limited access to specific group of users. Academic libraries would be a significant part in students seeking information.

Teachers and librarians come together in a variety of ways to incorporate information seeking experiences into undergraduate program in a successful way. On the other hand, the students coming out of graduation will have the challenge of applying their learning experience in complex situations and in different learning situations. Learning academic involvements in higher education institutions are classically more prearranged and progress at a slower rate than at workplaces and life situations.

The Study would be very much important in understanding the rural undergraduate students' skills in identifying the required information, a choice of options they choose whether it is formal or informal information sources, their preference to different sources of information and the barriers in their quest of information. There are many studies in information seeking behaviour of different students of different disciplines and have been carried out at various levels. These user studies intend at having a better understanding of the students' information needs in order to be able to project added efficient and effective knowledge systems.

2. NEED FOR THE STUDY

Higher education institutions are in the process of progressing both economically and socially, many existing undergraduate colleges have been upgraded to post graduation level and new few

new colleges have been set up with PG and research facilities. Library and information centers are very imperative part of these higher education institutions. with improvement in higher education level, the information demands of the library users have gradually augmented. A need has, therefore, been felt to study the users' Information Seeking Behaviour in the libraries of these colleges of higher education. The current study investigated the information seeking behavior of the undergraduate students of the selected Government Colleges in Mysuru District, Affiliated to University of Mysore, Mysuru in Karnataka State.

3. SCOPE AND LIMITATIONS OF THE STUDY

Each and every research study will have its own limits and this study is no exception. Some of the confines of the present study are, that this research is confined to students of government colleges established in Mysore district only, and is based on the data received from the undergraduate students. Suitably of the results has not be inferred to students of other private academic institutions. Present study relies on the data obtained from the randomly selected students' self-appraisal method only.

4. OBJECTIVES

This study is been carried out with the context of having the following objectives

- To identify the information needs of the students of the selected Government Colleges in Mysore District affiliated to University of Mysore, Mysuru.
- To explore the reasons for seeking information from the library
- To analyze the frequency and purpose of visit to library
- To evaluate the library resources and services by the users
- To find out the user satisfaction on information sources and services among the respondents

5. METHODOLOGY AND REVIEW OF LITERATURE

The current study encompasses following sequential phases, which are portrayed below

In the first phase, a brief review of previous literature was carried out with an objective to find out the suitable hypothetical framework in developing a model and to explore the dimensions and determinants of undergraduate students' information seeking behaviour. Since there are various representations of seeking information, it's a very tough job to choose a suitable framework of a modular nature.

"A model should portray and elucidate a sequence of behaviors by referring to pertinent variables, rather than merely indicates a sequence of events, it should designate something about information needs and sources, and should be a universal model but not narrowly focused on a few issues".¹

Kingrey insists that seeking information is very much complicated process to completely conceptualize for the persistence of rationalization. Nevertheless, there has been substantial curiosity in recent past in creating conceptual models in seeking information and retrieval of information systems. These representations present a segment or a complete sequence of behaviour, which, basically, guide to acquire appropriate information.² Large et al, asserts "that in order to conduct a search for any kind of information, it is essential to progress through a series of steps in a search process and this is the instance of any information seeker irrespective of beginner, an experience user, or is a subject expert".³ And within this context present study inspects significant models projected to exemplify the information seeking process and consequently endeavor to incorporate essentials into a behaviour model of searching and

accessing information of undergraduate students. We can see many information seeking models in previous user studies that has published in the literature over the years, on the other hand, only a few information models have become extensively popular and widely accepted.

5.1. Kuhlthau's Information Search Process Model

In a considerably more explicit framework with a broader sense, Kuhlthau developed a model on how students search for information as part of their research process. Kuhlthau, 1991's study discovered a shared information search process and common expressive designs. The study describes the "initiation, selection, exploration, formulation, collection and presentation of information using the phrase information access process". Basically, this model focuses on the search processes, rather than how to utilize and assess the information found and again presents a linear approach to information seeking.

Task Initiation: "This is the stage when a user's focus is on determining their context for information seeking and recognizing that information is needed to complete the task".

Topic Selection: "The task is to „select“ the general topic or the approach that has to be pursued".

Exploration: "This stage involves investigating information, which is general to the topic, rather than information in order to widen understanding that is specific".

Formulation: "From the information gathered in the exploration stage, the user now forms a focused perspective on the topic".

Collection: "Here, information specifically associated to the definite focused topic that is gathered and knowledge of the common subject area is increased".

Presentation: "In this phase, the concluding searches are done, searches should be returning information that is either superfluous with what has been seen before or of retreating relevance".

28

5.2. Sonnenwald's Information Horizon

"Sonnenwald summarizes the information horizon interview in a methodological statement which is a case study of information behaviour", and this study "evaluated the impact of an electronic mentoring program on students in lower socioeconomic areas and also focused on their information seeking behaviour".⁴ There were eleven undergraduate study participants enrolled in a life science course.

The study results acknowledged, in an intense newer way, the undergraduate students' favored information resources, their array of information retrieval, and the effect of social networks on information behaviour. Student respondents were talented to create the maps, substantiate that user *can* draw their own information horizons. in spite of the uncertainty raised from a more contemporary critical visual methodology the milestone report and methodology has been an encouragement and primary design for further consequent information behaviour research studies.⁴

Figure 1 Example of The Results of the Information Horizon Interview (Sonnenwald, Wildemuth, and Harmon, 2001).

5.3. Dynamic Berry-Picking Model

The customary information seeking development model enclose a primary postulation that the library user's information need is stagnant and the process of seeking information is one of sequentially refinement of a problem until all and only that information is appropriate to the innovative information need has been accessed. Previous literature on the process of information seeking find that seekers' information needs vary, as they interrelate by exploring network of information. "Searchers learn about the topic as they scan retrieval results and term suggestions, and formulate new sub questions as previously posed sub questions are answered and are useful for describing the basics of information access systems, the standard interaction model has been challenged on many fronts".⁵

Figure 2 A drawing of an information seeker involved in "berry-picking" pattern of information seeking process.

Bates projected his berrypicking model of seeking information, which consists of two major issues. The initial one is that, "in the process of understanding and learning the concept of a subject from the information encountered throughout the searching process, the searchers' need for information and as a result their queries persistently shift as shown in the figure 2". "Information come across at one point during a search may guide in an innovative, unexpected direction". The innovative objective may become partially satisfied, thus decreasing the main concern of one objective in favor of other. The second issue is that "searchers' information needs are not fulfilled by a single, final retrieved set of information, but rather by a series of selections and bits of information established down the way".⁵

By studying various information seeking models, Bates, berry picking model was chosen to serve as the hypothetical framework and the source model for this study. Bates model is a diverse model that comprise both events and information essentials. Events elucidate actions

involved in during information seeking and an information essentials element symbolizes the features that outline information seeking.

In the next phase, available experiential literature on information needs and seeking behaviour of undergraduate students were reviewed.

In the last three decades, many researchers have carried out various research in all disciplines to classify the needs and information seeking behaviour of different type of students, scholars and of various professions. Though, a small amount of research recognizes the information needs and information-seeking behaviour of rural and sub-urban government college students.

Information seeking is a multifaceted technique that involves a series of processes undertaken by the needy or a user, initially feel his information need and then the set of actions taken to gratify that need facilitated by the combination of formal information sources such as library, internet and scholarly journals also informal information sources that includes social media and interaction with experts and teachers. Library users are the chief stakeholders of any library and information centers. He is the main component of any information system in the library hierarchy.

T.D.Wilson is one of the popular names and one among the pioneers of the studies of library users Information Seeking Behaviour. Wilson in his research studies "On User Studies and Information Needs"⁶ (1981) and "Human Information Behaviour"⁷ (2000) attempted to characterize information, information needs and information behaviour. He tags the term Information Seeking Behaviour and put forward his information behavior models in 1981 and 1999. He differentiated between needs and wants and between perceived needs and expressed needs of the library users. He advocated that Information Seeking Behaviour comprise those actions which any person may engage in order to identify and categorize his need and seeking information to fulfill that need.

Mathew, Okoh and Osaze, Ijiekhuamhen investigated the "information seeking behaviour of undergraduates of the Federal University of Petroleum Resources" (FUPRE). The study findings showed that the "respondents print textbooks of library resources and social media as major academic resources". "Lack of ICT skills, insufficient power supply and lack of information search skills were found as factors affecting information seeking behaviour of the users". The study strongly suggested to train them ICT skills.⁸

Lippincott and Kyrillidou (2004) "explored the information seeking behaviour of undergraduate students and the study found that 90% students used search engines on a daily basis and 19% used the library daily as place of significance to the undergraduate students".⁹

OCLC "on their research paper on the information seeking behaviour of University students reported that 7 out of 10 students used the library's website for some or the other academic assignments and 67% students used the full text journals for their reference, 57% students used library catalogue 51% students used databases and indexes".¹⁰

How lader investigated the information seeking behaviour of the undergraduate students at Dhaka University, Bangladesh, the study found that "majority of the undergraduates needed educational and employment related information and to meet their needs, they occasionally went to the library to study and to prepare for competitive examinations". And for their educational assignments, they were deeply reliant on the classroom talks and they were somewhat happy with the information facilities they got.¹¹

The study conducted by Sudhir (2015) on "information seeking behavior of under- graduate students in Ratnagiri district colleges, affiliated to university of Mumbai, Maharashtra revealed that most of the students come to library to borrow books and refer newspapers to gain knowledge". They preferred to study in mother tongue and few students were actively using the

library, they approached library staff in search of information. Most of the students were depending on the book bank scheme library service. Library was underutilized due to lack of time.¹²

Ajiboye and Tella (2006) study revealed that the primary information needed for the undergraduate students is related to academics only. The study discovered that 64.1% students needed academic related information which was highly rated the highest percentage, other information required by the students are, information for self-development with 12.5% students, health related information with 11.25% students, employment related information with 9.3% students and the remaining 2085% students needed other miscellaneous information.¹³

Hartmann (2001) remarked in his research study that “majority of the undergraduate students experienced complexity in locating information resources from the library collection and do not comprehend the processes for retrieving journal articles”.¹⁴

In the study of Kakai, Odongo and Bukenya (2004), “undergraduate students came across the information barriers during their access to information, limited or inadequate borrowing facility of the required books were in the closed access, inadequate copies of the books, most of the books were outdated and lack of user education program and inadequate awareness of the library and information resources and its services”.¹⁵

This phase was carried out with a concerned groundwork investigation through which informal discussions with librarians and target respondents” interactions with students.

Majority of the studies on undergraduate students cited in this study were carried out in academic environment not much of different from those of this study. Therefore, it was well thought-out imperative to build up a general consideration of the information needs of undergraduate students, their information resources and the way they pursue information. This understanding facilitated me substantiate and correlate the literature findings i.e., information needs, information resources of students and design the related questionnaire.

A mixed technique approach was engaged to gather the information from the respondents. Research methods characteristically used to investigate the issues include, surveys, informal interviews and direct observations. A predesigned and a pre-tested questionnaire were used to collect the data about socio-demographic profile of the respondents, library usage pattern, physical infrastructure of the library, and challenges in utilizing library and information services. The questionnaire was distributed to the students in the library.

Semi-structured open-ended interviews were conducted to collect quantifiable facts that could be investigated with statistical data study methods. Participant observation to get the data about participants” behaviour.

6. INFORMATION HORIZONS MAPS

This phase concerned with executing and validating the adapted model by using the data collected through an experiential survey. Undergraduate student”s information needs characterize one of the major building blocks of the projected information horizons.

The research literature studied and the observations from librarians and student”s interaction it is understood that information need extents were recognized as the foremost information elements of undergraduate students. These information extents were offered to the students, to understand each element in order of significance on a four-point Likert scale.

The proposed information horizon map considers academic and competitive examinations, previous years question papers and employment as a major set off driving factors as an information needs and doubts, anxiety, fear, lack of information literacy, motivation and

satisfaction level are some of the other related activation factors influence student's information needs

In designing and developing a new research methodology the study used "Sonnenwald's structure for human information behavior as a hypothetical foundation". "This speculative framework suggests that within a context and situation is an „information horizon“ in which we can act". "For a particular character, a variety of information resources may be encompassed within his/her information horizon".¹⁶ It includes subject experts, library documents, online resources, social networks and information retrieval tools.

Sonnenwald stresses on the "attitude that one's patron pertaining to the worth of a specific source will influence his own judgement about the worth of that resource" and, thus, its value within one's information horizon. Communications with the peers will make him aware of his beliefs and so are likely to cause transformation in one's information horizons. It is quite obvious in an academic context, "a teacher may suggest a book or a journal to a student, thus adding up that resource to the student's information horizon when the teacher has a constructive influence of that student".¹⁶ Accordingly, the perception or a philosophy of information horizons suggests that few kinds of information contexts are imperative for escalating considerations of our human information behavior. This information includes resolutions made and actions carried out during the information seeking process.

7. DATA COLLECTION AND ANALYSIS

The study is a descriptive survey and covered 365 undergraduate students in Arts, Commerce, Management and Science streams in the following 6 Government colleges. Questionnaire survey method was employed for the current research. Distributing questionnaires is the favored tool for collecting the data to get the maximum responses from the respondents for the current study.

A total of 365 questionnaires were distributed to following five government first grade colleges coming under Mysore University in Karnataka

- Government First Grade College, Saligrama
- Government First Grade College, K R Nagara
- Government First Grade College for Women, K R Nagara
- Government First Grade College, Holenarasipura
- Government First Grade College for Women, Holenarasipura
- Government First Grade College, Bilikere

A Total of 317 filled in questionnaires were received in response. The response rate came out to be 86.84 %. Data obtained from the filled in questionnaires was compiled and tabulated in excel sheet. Simple frequency and percentage method were followed in order to analyze and interpret the data collected from the respondents using SPSS software.

Appraising the referred framework with experimental data was necessary in instituting its legitimacy and reliability. The investigation data was intended at assessing the proposed model. Current proposed model is an expressive graphic framework that could be served as a hypothetical structure for analyzing undergraduate students' information seeking behaviour.

8. FINDINGS AND DISCUSSIONS

8.1. Demographic Profile of the Respondents

The undergraduate students' age ranged from 18 to 24 years of age. The data analysis regarding the gender wise physiognomies of the study shows that out of 365 respondents, 131 (41.32%) were male students and remaining 186 (58.67% percent) were female students participated in the survey.

Figure 3. Gender wise distribution of the respondents

Table 1. Prioritized information needs of the students

Information Needs		Major extent	Moderate extent	Minor extent	Not at all	Total
Academic/examination-oriented information	Frequency	283	18	14	2	317
	Percent	89%	6%	4%	1%	100%
Sports/entertainment information	Frequency	124	84	54	55	317
	Percent	39%	26%	17%	17%	100%
Job related/employment information	Frequency	136	57	83	41	317
	Percent	43%	18%	26%	13%	100%
Information related to higher education	Frequency	120	59	73	65	317
	Percent	38%	19%	23%	21%	100%
Previous years question papers	Frequency	177	122	12	6	317
	Percent	56%	38%	4%	2%	100%

It is observed from the study that 89% of the students were in need of academic and examination-oriented information for the major extent, it was found that 39% of the students needed sports, entertainment information to a major extent and 26% students needed to a moderate extent followed by 17% students to a minor extent. When the respondents were asked about the information need about job related and employment information, it is seen that 43% need to a major extent, 18% to moderate extent with 26% of minor extent and only 13% responded not at all. When it comes to the information related to higher education it is found that 38% of the students responded to a major extent, 19% to a moderate extent, 23% to a minor extent followed by 21% of not at all response. It was expected that like other studies half of the students i.e., 56% responded to a major extent followed by 38% to a moderate extent, and a nominal of 4% and 2% to a minor and not at all responses. The study findings supported the previous studies that have proven that “undergraduate students need information for their academic activities” (Oladokun (2009), Baro et al. (2010), Kakai et al. (2004)). This suggests that the undergraduate students are in action seeking information who are completely conscious

of the purpose of gathering information. In addition to this, there is an exhibition of Kuhlthau's information model, sense of directions underneath the gathering stage and also collecting of relevant information, as students tend to emphasis on academic information (Kuhlthau et al. (1991).

Figure 4 Information needs of the students Purpose of Visiting Library

Table 2. Purpose of Visiting Library

Purpose of Visiting Library		Always	Often	Rarely	Total
Borrow books	Frequency	258	34	25	317
	Percent	81.39%	10.73%	7.89%	100%
Refer books and periodicals	Frequency	83	148	86	317
	Percent	26.18%	46.69%	27.13%	100%
Sports and entertainment information	Frequency	132	145	40	317
	Percent	41.64%	45.74%	12.62%	100%
To use internet and access e-resources/NLIST	Frequency	53	176	88	317
	Percent	16.72%	55.52%	27.76%	100%
To write assignments and make notes	Frequency	99	167	51	317
	Percent	31.23%	52.68%	16.09%	100%
Newspaper reading	Frequency	221	59	37	317
	Percent	69.71%	18.61%	11.68%	100%

It is observed from the above table that 81.39% of the students always visits the library to borrow materials and other reading materials followed by 10.73% visit often and 7.89% rarely visit the library. When the students were asked to reply about referring the books the results show that 26.18% always visit and 46.69% visit often followed by 27.13% rarely visit the library. Students also visit the library seeking information related to sports and entertainment information, results show that 41.64% visit always, 45.74% visit often and only 12.62% rarely visit the library.

It is common in most of the government colleges that, due to lack of ICT infrastructure, as it is observed in most of the studies that visiting the libraries to access internet and other e-resources including NLIST we see poor response rate, this study also supports the previous studies of Nazim & Saraf (2006), Ozad (2010), Sujatha (2011) and Rajeev & Ampritpal (2004).^{20- 23} Only 16.72% students always visit the library for using internet and access e-resources/NLIST and 55.52% visit often followed by 27.76% rarely visit the library for online resources. If we see the students coming to library to write their assignments and to make notes of the library materials results show that, 31.23% always come to library, 52.68% often come

to library and 16.09% rarely visit library. The study proved and support the studies of Chethan (2019) and Ambika (2018) in terms of visiting the library to read newspapers as 69.71% always come to library and 18.61% often visit the library followed by 11.68% rarely come to library to read newspaper.^{24,25}

Figure 5 Purpose of Visiting Library Time Spent in the Library

Table 3. Time Spent in the Library

Time Spent in the Library		Undergraduate Students
0-1	Frequency	227
	Percent	71.60%
1-2	Frequency	50
	Percent	15.76%
2-3	Frequency	26
	Percent	8%
More than 3 hours	Frequency	14
	Percent	4.45%

The above table 3 shows that majority of the students i.e., 71.6% spend less than one hour in the library followed by 15.76% spend 1-2 hours, 8% spend 2-3 hours and just 4.45% spend more than 3 hours in the library.

Figure 6 Time Spent in the Library Purpose of seeking information

Table 4. Purpose of seeking information

Purpose of seeking information	Always	Often	Rarely	Total
Preparation for Examinations	270	30	17	317
	85.17%	9.46%	5.37%	100%
Preparation for Competitive Examinations	82	91	144	317
	25.87%	28.70%	45.43%	100%
Preparation for Assignment/Seminar/Notes	191	57	69	317
	60.25%	17.98%	21.77%	100%
To enhance knowledge & to keep up-to- date	202	68	47	317
	63.72%	21.45%	14.83%	100%

The above table 4 describes the purpose of seeking information and in this current study 85.17% respondents always seek information to prepare for academic examinations followed by 9.46% often and 5.37% rarely. In terms of preparing for competitive examinations results show 25.87% always, 28.70% often and 45.43% rarely. While preparing assignments, seminars, discussions and for notes 60.25% students opined always, 17.98% said often and 21.77% replied rarely to the question. To enhance knowledge and to keep up-to-date students revealed that 63.72% always seek information and 21.45% often seek followed by 14.83% rarely seek information from the library.

Figure 7. Purpose of seeking information Sources of Information

The study found that most of the undergraduates preferred information sources like print books from the library, notes given by the teaching community and searching through Google. Specific URL's, online information, online databases and journals were of least preference. Also, students believed that print books, teachers and library professionals were one of the most reliable resources. Most of the information they used it for their academic purpose only and course-related assignments, it was found that few students less than 40% worked on higher education, job related information and competitive examinations. The print media was the major sources of information when compared to electronic resources. It was found that most comfortable and easy to use sources of information among the respondents.

8.2. Adequacy of Library and Information Resources

Table 5. Adequacy of library and information resources

Adequacy of library and information resources		Good	Average	Poor	Undecided	Total
Book Collection	Frequency	202	75	19	21	317
	Percent	64%	24%	6%	7%	100%
Borrowing Facility	Frequency	148	125	23	21	317
	Percent	47%	39%	7%	7%	100%
Library Staff Co-operation	Frequency	296	8	0	13	317
	Percent	93%	3%	0%	4%	100%
Reading Space (Seating Capacity)/infrastructure	Frequency	90	192	23	12	317
	Percent	28%	61%	7%	4%	100%
Satisfaction towards library services and its resources	Frequency	232	54	23	8	317
	Percent	73%	17%	7%	3%	100%

In the above table 5 it is observed that 64% of the students opined good about the adequacy of library and information resources, 24% replied average, 19% poor and 7% were undecided. When the respondents asked about the borrowing facility, it is seen that 47% replied with good response, 39% average, 7% poor and same percentage were undecided. It was usual that library personnel cooperation was quite good as majority of the students opined i.e., 93% good to the library staff cooperation. In terms of library infrastructure, reading space and seating capacity, it is observed that 28% said good, 61% opined average followed by 7% poor and 4% were undecided. The opinion about the satisfaction towards library services and its resources 73% of the respondents opined good followed by 17% of the students replied average and 7% replied poor and 3% were undecided.

Figure 8. Adequacy of library and information resources

All the students were asked to portray exact information seeking situations. Particularly, they were asked to depict information need and the sources of fulfilling their information need. Student participants were also asked to summarize questions about the kind of information needed and why that particular information was needed, which are the types of information sources they have accessed, whether they were fulfilled with the results.

In conversing with the current information seeking situation, students were asked to explain the situation when they felt it complex in finding information, easy to locate and search

information, very pleasing in seeking information, and very frustrating. For some of the participants the study had seen some overlaps among these happenings.

The major objective of the study is to persuade the student participants to express their views in terms of information seeking methods, sources of information, and appraisal of these sources of information and to make sure that the responses recorded were as all-inclusive. The study discussion queries were trailed by a graphic illustration or sketch, some of the participants were requested to sketch illustrative plot of their information horizon as well as all the information sources explained to that particular issues during the interview giving the freedom of response to the participant. Student Participants were also given confidence to discuss about and elucidate their graphical representation or a sketch drawn by them.

Undergraduate students' information horizon maps drawn by the students are compiled consolidated and exemplified in figure 9. Majority of the respondents are able to illustrate their information seeking situations and craft a graphical depiction of their own information horizons. The methodological question addressed in this study is articulated through information horizons graphically. This graphical representation could provide an extent of prosperous view of undergraduate students' information horizons and information seeking behavior in a broader spectrum.

Exploratory approach and pragmatic substantiation resulting in this study were implanted into Sonnenwald's information horizon mapping to synthesize a mapping model that explores undergraduate students' information seeking behaviour. The adapted model is presented here in Figure 9.

Figure 9 Information Horizon Map of Undergraduate Students'

In the above map, the motivating factors of students in a setting and information need framework persists unchanged when compared to Sonnenwald's information horizon map. In Sonnenwald's student's information horizons graphic presentations, "stimulating methods" as motivators trigger off the students to search for information. Based on understanding gained in the study, the "stimulating methods" of Sonnenwald's study of 1999 were characterized

according to the perspective of academic needs of learners. Consequently, the perceived doubts concerning to these stimulating features form the student's information needs.

The above information horizon map comprises three extensive categories of intervening variables such as demographic, individual, socio cultural and character related. These prevailing variables manipulate the information needs as well as seeking behaviour of students. In this study, demography consists of age, gender and academic levels. Individual and character related variables include cognitive factors. Socio cultural variables include both cultural and interpersonal factors.

In this present study five information sources were acknowledged as the major information sources used by rural/suburban government college students, grounded on the research works studied above and the experiences later on. Study respondents were offered with the five sources of information in the questionnaire and were questioned to measure each information sources in terms of regularity interaction and grades of helpfulness on a four point Likert scale.

In Figure-9 students information horizon map reflects on five types of stimulating factors such as academic/examination, sports/entertainment, job related/employment, higher education/competitive exams and previous years question papers and on the whole doubts relating to these active factors influencing students "information needs. It is found from the study that observation of the convenience, quality, expediency, and reliability of information sources design seeking behavior. Accordingly, students were offered with the information channels that were known and queried to appraise them in terms of ease, approachability, content appropriateness, reliability and expenses involved in it. The information seeking activities were identified as familiar searching, conclusive actions, networking, succeeding, authenticating and validity. Majority of the information sources are subject experts (61%), library resources (77%), friends, & family (41%), self-experience (32%), search engines (39%), social media (62%) and face-to face situations (22%) to the major extent. However, physical library and networking social medias stands at the top when compared to search engines. The questionnaire corroborated the proposed model and established that demographic variables employ a substantial outcome on the information seeking behaviour of undergraduate students as they use variety of knowledge sources.

The information utilization by the undergraduate students is researched and studied in a variety of viewpoints and needs. It is observed from the previous studies from Fosmire, (2014) Allard & Tenopir, (2009), Head (2012) that these students make a "least or no effort" in accessing to information and using that information in real life situations that prefers rapidity and expediency over the expertness and exhaustiveness.^{17,18,19}

9. SUGGESTIONS AND RECOMMENDATIONS

This study presents the suggestions and strongly recommends from the research that explored the information seeking behaviour of under graduate students of Mysore University. The main aim of this study is to frame the network design, development and execution of an information services system for the undergraduate students. The recommendation presented here in this study are based on the data collected from respondents.

- The librarian should assist students in better way. Library personnel should help them to improve their information seeking skills and help them to find the different type of information they need. They should also assist in learning and using the OPAC, search engines, e-mail, and database search techniques in acquiring different types of information.
- Adopt regular information literacy programs to mobilize the maximum usage of library and information resources and to create the awareness of online and e-resources.

- Lack of relevant reference information sources that might address the academic education program of study demands the conduct of education user needs study in order to engage the distance learner community in the development of the library collections.
- Exclusive library collections for the purpose of appearing various competitive examinations and also supportive academic programs that supplement the curriculum in terms of books and up-to date resources in both English and regional language. More number of books to be added to the library collections with the increased borrowing period.
- Introduction and maintenance of alerting services as graduate learners need current and latest information and it is evident from the study that these students do not have anything in personal to keep them up to date in their relevant subject field as many of the students come from economically weaker sections of the society.

10. CONCLUSION

The study augments the earlier information seeking behaviour models of by considering the role of library and other related sources including social media (Vijayibhava, Jnananidhi from the DCE of Karnataka State) and provides valuable insights for undergraduate students and also for the universities and higher-education institutions.

The study results that majority of the students favored print books as a major source followed by an internet and social media as a major information sources. In addition to this findings of the study finds that majority of the respondents needed information mostly for their scholastic and intellectual work outs, accomplishing class work notes including related activities and assignments, preparing for academic and competitive examinations and completing internal assessment tests. Majority of the students favored the library and print books as the first choice for their knowledge quest. Kuhlthau's proposed "information search process model regarding the student's emotions, that includes anxiety, confidence, ambiguity and anticipation, were practiced by majority of the students as they underwent in search of information accomplishing a task". Though, we can observe a many challenge that affects undergraduate learners information seeking behaviour, such as the absence of knowledge literateness skills, inadequate collection of books, restricted access and shortage of financial support.

In contrast to literature and earlier studies, findings of the study found that the "information needs of any progression studies students are mainly intensive on academic, employment and higher education related purposes". Seeking information and knowledge congregating is a significant constituent of their work, as they collect materials, related to their over-all intellect. Promoting undergraduate students have supplementary information needs that go beyond their scholastic and intellectual needs. "And there is a prerequisite demand to design information and knowledge interferences that would augment their information exploration experience grounded on some of the indicators explored by Kuhlthau's information model". In sight of the overhead study, it can be contended that library and information resources is fetching a prevalent source of information among all the information aspirants, henceforth, there is a need to deliver and afford information and intellectual support that would condense students' undesirable anxiety and emotions and boost their information search process, thus educating the all-inclusive excellence of teaching learning process.

REFERENCES

- [1] Case, D.O. (2012), Looking for Information: A Survey of Research on Information Seeking, Needs and Behavior, 3rd ed., Emerald Group Publications, Bingley.
- [2] Kingrey, KP, "Concepts of Information Seeking and Their Presence in the Practical Library Literature", Library Philosophy & Practice, 4(2), 2002
- [3] Large, A., Tedd, L., Hartley, R., (1999). "Information Seeking in the On-Line Age: Principles & Practice", Bowker-Saur, UK.
- [4] Sonnenwald, D. H., Wildemuth, B. M., & Harmon, G. L. (2001). A research method using the concept of information horizons: an example from a study of lower socio- economic students" information seeking behaviour. The New Review of Information Behaviour Research, 2, 65-86.
- [5] Bates, M.J., (1989). The design of browsing and berry picking techniques for the on-line search interface," Online Review, 13(5), 407-431
- [6] Wilson, T.D. (1981). On user studies & Information Needs. Journal of Documentation, 37(1), 3-15.
- [7] Wilson, T.D. (2000). Human Information Behaviour. Informing Science, 3(2), 49-55.
- [8] Mathew, Okoh and Osaze, Ijiekhuamhen (2014). Information Seeking Behaviour of Undergraduates in a Nigerian University. Journal of Information and Knowledge management, 5(2), 69-83.
- [9] Lippincott, S and Kyrillidou, M. (2004). How ARL University community access information: highlights from Lib QUAL. ARL Bimonthly Report 236.
- [10] [Online]. <http://www.arl.org/newsltr/236/lqaccess.html>. (Accessed 14 July 2020).
- [11] OCLC, (2002). OCLC White paper on the information seeking behaviour of college students: How academic librarians can influence student"s web – based information choice. [Online]. <http://www.oclc.org/research>. (Accessed 26 September 2020).
- [12] Howlader, Islam, & Anwarul Islam (2019), Information-seeking behaviour of undergraduate students: A developing country perspective. IFLA Journal, 45(2), 140- 156.
- [13] Sudhir, More (2015) Information Seeking Behavior Of Under-Graduate Students In Ratnagiri District Colleges, Affiliated To University Of Mumbai, Maharashtra, Scholarly Research journal for interdisciplinary studies, 3(19), 477-490.
- [14] Ajiboye, JO and Tella, A. (2006). University undergraduate students" information seeking behavior: implications for quality in higher education in Africa. [Online]. <http://www.tojet.net/article/614.doc>. (Accessed 15 July 2020).
- [15] Hartmann, E. (2001). Understanding of information literacy: the perception of first year undergraduate students at the University of Ballarat. Australian Academic and Research Libraries, 32 (2): 35-43.
- [16] Kakai, M., Ikoja-Odongo, R and Kigongo-Bukenya. (2004). A study of the information seeking behavior of undergraduate students of Makerere University, Uganda. World Libraries, 14 (1), 14-26.
- [17] Sonnenwald, D.H. & Iivonen, M. (1999). An integrated human information behaviour research framework for information studies. Library and Information Science Research, 21(4), 429-457
- [18] Fosmire, M. (2014). Ways that engineers use design information. In M. Fosmire, & D. Radcliffe (Eds.). Integrating information into the engineering design process. West Lafayette, IN: Purdue University Press. Retrieved from https://docs.lib.purdue.edu/purduepress_ebooks/31/.

Investigating Information Seeking Behavior Using the Concept of Sonnenwald's Information Horizons: An Example from a Study of Undergraduate Students in Karnataka

- [19] Allard, S., Levine, K. J., & Tenopir, C. (2009). Design engineers and technical professionals at work: Observing information usage in the workplace. *Journal of the American Society for Information Science and Technology*, 60(3), 443–454. <https://doi.org/10.1002/asi.21004>.
- [20] Head, A. J. (2012). Learning curve: How college graduates solve information problems once they join the workplace. Retrieved from <http://www.projectinfolit.org/publications.html>.
- [21] Nazim, M. & Saraf, S. (2006). Information searching habits of Internet users: A users' study of Banaras Hindu University. *Annals of Library and Information Studies*, 53, 213- 218
- [22] Ozad, B. (2010). The use of the Internet in media education. *The Turkish Online Journal of Educational Technology*, 9(2), 245-255.
- [23] Sujatha, H. (2011). Analysis of Internet use in undergraduate colleges of Mangalore. *DESIDOC Journal of Library & Information Technology*, 31(3), 35-40.
- [24] Rajeev, K. & Ampritpal, K. (2004). Use of Internet by Teachers and Students in Shaheed Bhagat Singh College of Engineering and Technology: A Case Study. *J. Libr. Inf. Sci.* 29 (1&2), 81-94
- [25] Sharma, Chetan & Saini, Rajni. (2019). Newspaper Reading Habit among the Students of University College Kurukshetra: A Case Study. *Library Philosophy and Practice*.
- [26] M. Ambika, K. UthiraSamy. (2018). Newspaper Reading Habits Among Postgraduate Students of Periyar University, Tamil Nadu. *Journal of Advancements in Library Sciences*. 5(3): 56–61.
- [27] Kuhlthau, C., (1988). Developing a Model of the Library Search Process: Investigation of Cognitive and Affective Aspects, *Reference Quarterly*, 28(2), 232-242
- [28] Kuhlthau, C., (1993). *Seeking Meaning: A Process Approach to Library and Information Services*, New York: Greenwood Publishing,
- [29] Kuhlthau, C.C. (1991). Inside the search process: information seeking from the user's perspective. *Journal of the American Society for Information Science*, 42(5), 361-371.
- [30] Bhatti, Rubina (2009) Information Needs & Information Seeking Behaviour of Faculty Members at the Islamia University of Bahawalpur. *Library Philosophy & Practice*, 1-10.