

# Information Search and Use of Computer Science and Information Technology Undergraduates

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## Abstract

*Academic librarians and information professionals need to find out strategies and courses of action undertaken by undergraduate students in order to improve information literacy skills or user education programmes and for academics to find out how information literacy could be embedded in current project based courses taught at the faculties. This study used the diary-interview and in-depth interview approach involving 14 final year Computer Science and Information Technology undergraduates who shared their information search and use process. Among the main information sources used were the Internet, books and previous final year project reports. Students relied heavily on their friends and lecturers as their source of information. Very few used journal articles, seminar papers or other sources. Respondents did face problems when searching, evaluating, synthesizing and communicating the information gathered for their final year project proposal. The students also revealed the strategies taken to solve problems encountered. Informants' thoughts and feelings on the library services and the ethical use of information are also highlighted.*

**Keywords:** User studies; Information literacy; Information seeking behaviour; Undergraduates; Malaysia

## 1. Introduction

Information search and use behaviour form an important part of students' life and it cannot be assumed that undergraduates are skilled in finding and evaluating resources needed for their various educational needs. Libraries and faculty members continuously need to improve and orient their services, instruction methodologies, activities in tandem with the information seeking patterns of students in order to remain relevant and competitive. Information seeking behaviour is defined as the complex patterns of action and interactions that people engage in when seeking information for whatever purpose (Ellis, 2003). User studies in library and information science are based on the premise that an effective library service must begin with a clear understanding of information use and information delivery (Saitri, 1999). Investigations on the information needs and information seeking patterns of users would definitely help to improve teaching and learning and resources to cater for the ever changing needs of their respective clientele.

This paper reports on a part of a study carried out to investigate the information seeking behaviour of 14 final year undergraduates at the Faculty of Computer Science and Information Technology (FCSIT), University of Malaya when conducting their final project proposal. The objectives of this study are to find out the following: (a) the student's decision when choosing research topics; (b) the sources and channels of information they use and prefer; (c) the utility of libraries and librarians; (d) the use of the Internet; and (e) their thoughts on ethical issues when searching and using information.

## 2. The Case Study

All final year students, enrolled in the Bachelor of Computer Science (CS) and Bachelor of Information Technology (IT) at the University of Malaya are required to fulfill a 4 credit course comprising part I of their Final Year Project proposal. This is part of a nine-credit course, which extends over two semesters. Part 1 of the course (WXES 3181) requires the students to choose a project title, carry out an extensive literature review as well as identify similar systems in the domain they are developing, interview clients, understand their project scope, specify their project objectives as well as requirements and write these in the first three chapters of their report. During this process the students are required to read and search printed and electronic resources extensively. At the end of the semester students are expected to be able to explain about their proposed project and its viability. In this scenario these students are faced with a definite problem situation, which requires them to obtain information.

These students are expected to be computer and Internet literate by virtue of being adequately exposed to the CS and IT programmes for at least 2 years; and they are expected to be information skilled as they have taken a 1-credit course in "Information skills" offered by the University Library in their first year. This research is concerned about their information searching, evaluating and using rather than the IT skills associated with it. The 14 students volunteered as respondents and returned to the researcher a signed consent form each. The researcher believed the volunteers would be able to provide information because they are the experts and are privileged in witnessing (doing the research project) the event (Weiss, 1994). The sampling of this group is therefore purposive. The lecturers, who supervise students for the Final Year Project were approached to get volunteers among their supervisees. The criteria used for selection were; a) students must be willing to complete their Information Search Diaries, b) they must respond to the questionnaires posed through the e-mail, and c) they must participate in the periodic face to face interviews. The data gathering took over a period of nine months. The findings are discussed as follows.

## 3. Choosing the Project Title

Prior to student selection of topics, FCSIT lecturers would provide project titles, with specifications and requirements for each project on the Faculty's website. The students could view them, make reservation and subsequently meet their potential supervisor for details. Apart from the titles proposed by lecturers, students were also encouraged to propose titles that interest them. More than 50% of the informants depend on the titles provided by the lecturers (8, 57%) (Table 1). Eight of the informants did discuss their choice of topics with their lecturers/supervisors (R1, R3, R4, R6, R7, R10, R12, and R14). Three informants (R3, R4 and R9) proposed their own title. Their friends and seniors seemed to play a major role in the final selection of the title for the Final Year Project. At least 6 (42.8%) informants discuss their choice of topic with seniors/friends (R2, R5, R6, R7, R10, R12).

These informants felt their seniors would be able to guide them in not only selecting the title but also when doing the actual project. Agreement on the title is very important for the informants since they believed that their grades will be at stake if they do not listen to the advice of their lecturers. Some felt it is important to give what ever is required by their supervising lecturers, and hope that at the end of the course they will obtain a good grade. Overall only 4 (28.5%) informants (R8, R11, R13, R14) have chosen their topics without discussion. The rest, 10 of them at least, discussed it over with lecturers, seniors/friends and even their parents. This situation indicates that at least 71% of the informants do have the ability to recognize and understand their need for information.

During those discussions on the topic they were also able to gauge the scope, objectives and the information needed for their projects.

Table 1: Choosing their Project Title

Informant	Responses
R1	After discussion with lecturers, academic assistant, tutors, seniors
R2	Browsing through lecturer's list for personal favourite, I look for something interesting and nice to do. If I don't understand I will ask friends for advice or browse the Internet for more information
R3	I discuss with my father and the lecturer before proposing my topic
R4	I initially choose from the titles given by lecturers, but after discussions with my supervisor I have change the title
R5	With my friend from topics given by the lecturer
R6	I discuss with fellow course mates and some seniors, and then the lecturer who offers that title
R7	Discuss with friends, did some research on the topic and then discuss it with my supervisor
R8	Given by the lecturer, I was already late, and manage to get a lecturer to supervise me, what ever title she suggested I agreed
R9	My supervisor have accepted the title I proposed
R10	Seniors from my industrial training company, they really help me to clear up my confusion. Meanwhile I also consulted my supervisor and discuss with my group members
R11	Supervisor
R12	First I discuss with friends, then I went to see my supervisor
R13	Lecturer
R14	Supervisor, she gave me the idea

#### 4. Information Sources Used and Search Patterns Adopted

Being in the final year, informants are expected to use various sources of information within and outside the libraries (Table 2).

They have experience using various sources when undertaking their course projects and assignments for the past two years. All 14 informants stated that they used the Internet and past year Final Years Project reports available at the Faculty library. The Internet and past years project reports were utilized as a mean to familiarize themselves with the project title and considered as an important source of information. Respondents also used people-related sources such as friends (12 informants) and lecturers (12 informants) and gather information through surveys, interviews and visits (8 informants). Informants seem not to be able to appreciate the role of the librarians in supporting information search for their projects. Only one of them approached the librarian (R6). Books were high on the list of information sources used and journal articles were among the least used source.

##### (a) The Internet

Every informant used the Internet to find information. There were several reasons for using the Internet. Among them were that it was a quick way of getting information and accessing the facility was readily available to them. Searching of the Internet was regarded as very convenient for all of them. It could be carried out in between classes, in the evenings or over the weekends. It could be carried out not only on campus but also at

their hostels, their homes or even at cyber cafes. Informants claimed they would save the information found and read them later

Table 2: Information Sources Used

Respondents	R 1	R 2	R 3	R 4	R 5	R 6	R 7	R 8	R 9	R 10	R 11	R 12	R 13	R 14	Total
Information Sources															
Internet	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
Past years Final Year Projects	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
Lecturers	X			X	X	X	X	X	X	X	X	X	X	X	12
Friends	X	X		X	X	X	X	X	X	X	X	X	X		12
Books	X	X	X	X	X	X	X		X	X	X			X	11
Interview/Survey/Questionnaires			X			X	X	X	X	X		X	X		8
Journal Article		X	X	X									X	X	5
OPAC		X		X	X		X								4
Buy Books	X	X		X	X										4
Visits			X				X	X				X			4
Electronic Full Text			X	X		X									3
Brochures										X	X				2
CD Rom					X										1
Newspaper & Television											X				1
Seminar Papers				X											1
Attended Seminar	X														1
Reference Librarian						X									1
Online Index/Abstract															-
Government Reports															-

Respondents believed that the Internet would provide them with the most up-to-date information and the necessary links to further explore the information they were looking for. Every informant felt that the Internet was the ultimate source of information and that information obtained from the Internet was sufficient. R2 claimed that "Internet and books cover 70% – 80% of the information I need", while R14 summed up that "Internet provide the majority of information, if I want to find from other sources, it would take a longer time". Figure 1 illustrates the information search and use pattern using the Internet by the informants and problems they experienced while using the Internet.

When using the Internet, the informants used various search engines such as Alta Vista, MSN, WebCrawler, Google and others. Most of the informants prefer to use Google, which they perceived as a good search engine that can provide most of the information they were looking for. They claimed that their lecturers recommend using Google. Informants seemed at ease when searching the Internet. Most of them tend to use wild cards and keywords/subjects or phrases when searching. R11 explained "when I am searching databases or search engines, I use \* \*. I seldom use Boolean operators, since using \* \* is easier". R10 added that "Enter the keywords or phrase in this (+ "phrase/keyword") format or use the advance search in those search engines". This of course results in huge listings, but the informants seemed not too worried about the outcome. Informant R2 explained that usually, he gets the results he required from the first page, but most of them would either scan the first 5 to 10 pages or the first 50 - 100 listings. They believed that the more hits they get the more choice they can make. What worried them was when the search terms used do not give them any useful result. However, some informants like R5 was dazzled by the amount of listings she received when searching the Internet. She considered herself to be overloaded with information.

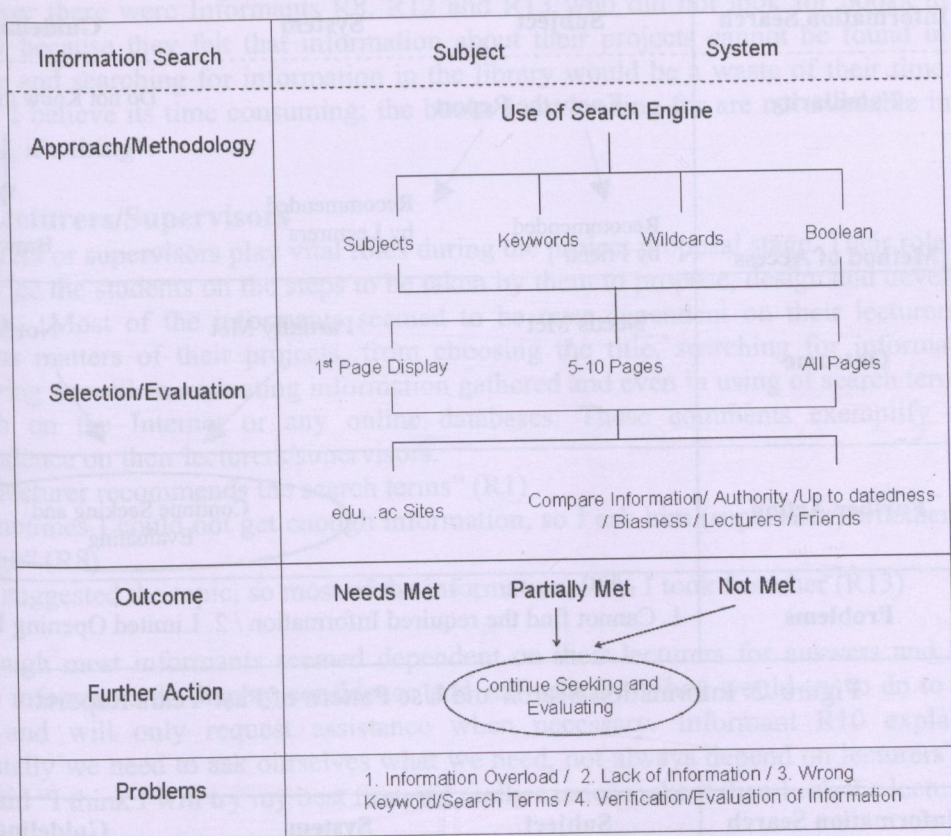


Figure 1: Search Pattern of the Internet

**(b) Past Years Final Year Reports**

The informants must submit their proposals in writing according to specifications given by the faculty. Although the informants have been given guidelines on how to write their proposal, all of them referred to past years Final Year Project reports because they perceived it as an authentic and authoritative source of information on how a proposal should look like. Further more these reports are kept in the Faculty’s library. They felt that they were more confident of their proposals after looking at the previous works. Informants claimed that they can get ideas on similar systems they will be developing and look forward to be able to improve previous systems that have be done by their seniors. Figure 2 illustrates the search and use pattern of previous Final year reports by the informants.

**(c) Books**

Apart from referring to texts recommended by their respective supervisors, informants tend to check the University of Malaya Library’s OPAC for books available in the library. Informants agreed that the content from books were reliable and authoritative especially if the books were from the library, since their lecturers were the ones that had suggested the titles. R2 commented, “I have to agree that books are definitely the most reliable source of information, at least printed materials are normally considered more reliable and trusted”. Every informant felt that information obtained from the books were better organized. Figure 3 illustrates information search and use process of books.

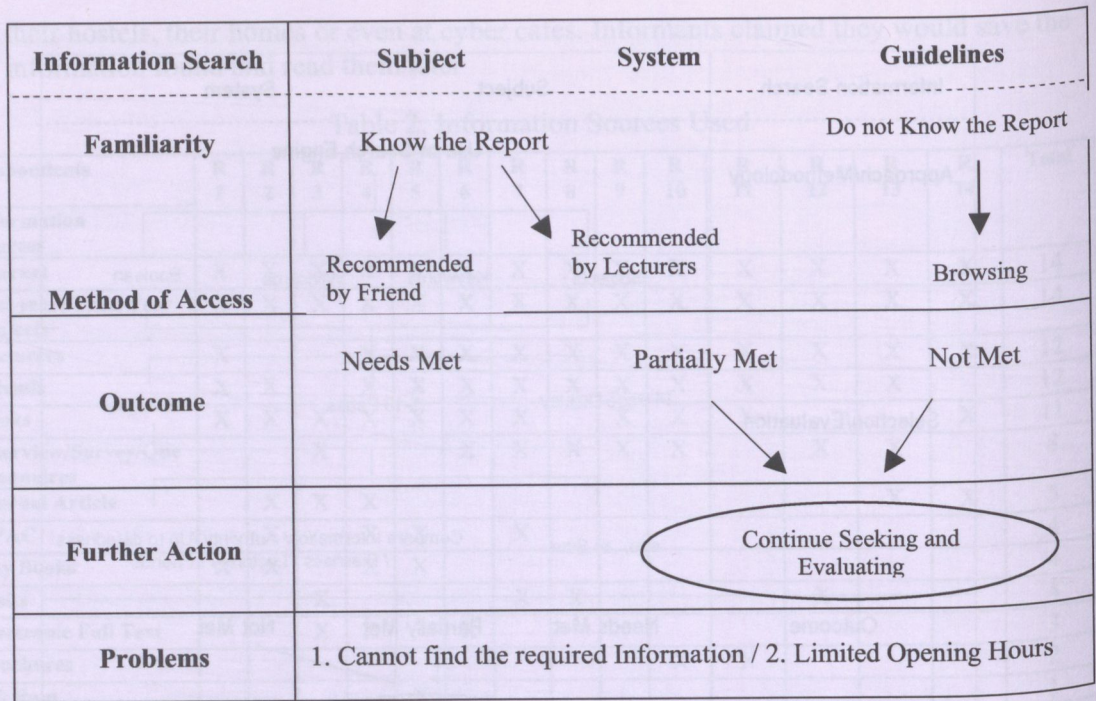


Figure .2: Information Search and Use Pattern of Past Years Reports

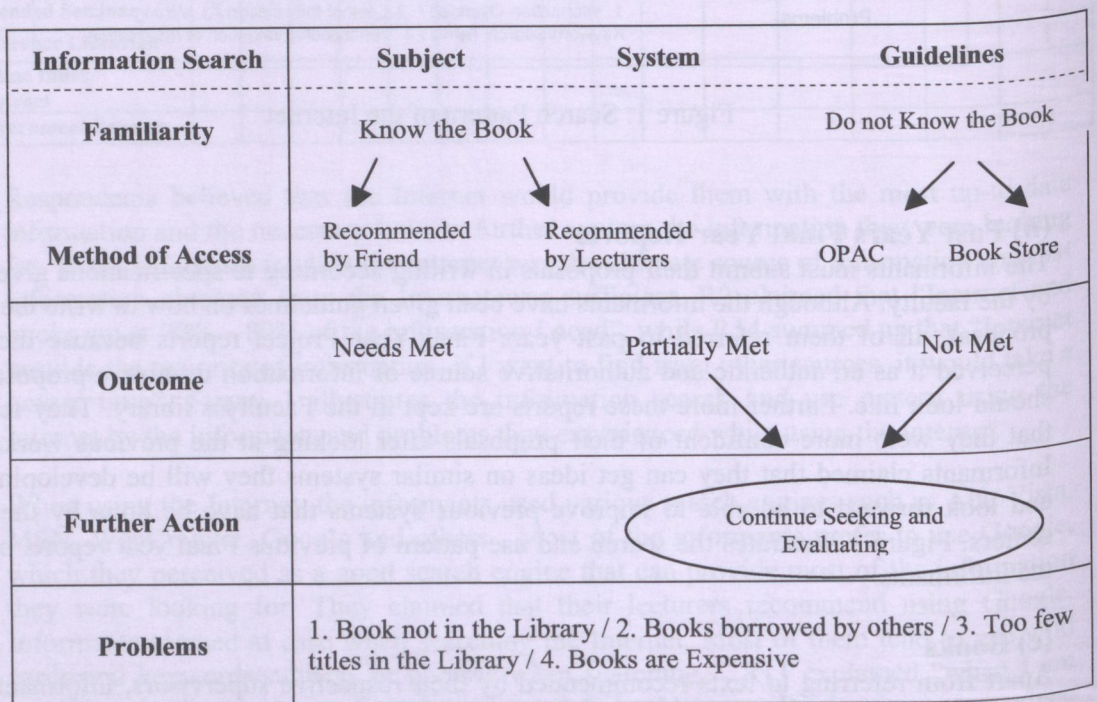


Figure.3 : Information Search and Use Pattern of Books

Apart from getting books from the library, informants will also look for suitable books related to their projects in the bookstores. R1, R2, R4 and R5 admitted that for their Final Year Projects they bought relevant books that were useful especially to understand the software platform and peripherals, which they need to use in their projects. The more books they have, the better they felt. Unfortunately for most of the informants, the books on the subjects they were looking for, were sometimes not available in the university library like in the case of R1, “too few titles are available”, and he further claimed that “there are only 5 – 6 books on neural net”, the subject of his Final Year Project.

However there were Informants R8, R12 and R13 who did not look for books in the library because they felt that information about their projects cannot be found in the library and searching for information in the library would be a waste of their time. R8 says, "I believe its time consuming; the books I am looking for are not available in the library, it's tiring".

#### **(d) Lecturers/Supervisors**

Lecturers or supervisors play vital roles during the project proposal stage. Their role was to advice the students on the steps to be taken by them to propose, design and develop a system. Most of the informants seemed to be over dependent on their lecturers on various matters of their projects, from choosing the title, searching for information, verifying as well as evaluating information gathered and even in using of search terms to search on the Internet or any online databases. These comments exemplify their dependence on their lecturers/supervisors.

"My lecturer recommends the search terms" (R1)

"Sometimes I could not get enough information, so I ask him (supervisor) whether it is enough" (R8)

"She suggested the topic, so most of the information, 90% I took from her (R13)

Although most informants seemed dependent on their lecturers for answers and help, some informants do display confidence and self-reliance. They would try to do to their best and will only request assistance when necessary. Informant R10 explained, "Actually we need to ask ourselves what we need, not always depend on lecturers" and R2 said "I think I will try my best first, if I really cannot make it then I ask the lecturer".

#### **(e) Friends**

From Table 1 many of the informants listed friends or seniors as one of the sources of information for their Final Year Project. They depended on friends during most of the phases of the project, from selecting the title, selecting the supervisor, looking for information and writing the proposal. They felt at ease with friends since they could talk to them about anything and at anytime of the day, especially during the evenings. They look high upon their seniors that can always guide them through the mechanics of doing the Final Year Project. Most importantly, the informants felt that their friends are non-judgmental and would go out to extreme length to help them. These friends were mostly their former classmates and their seniors, who are currently working at places where they had undertaken their industrial training the semester before. The only differences among these informants are the degree of dependence. Some only sought advice on certain matters, but some did get help throughout the whole project cycle.

#### **(f) Journal Articles**

Journals are known to provide accurate and up to date information on any area of study. There are many titles available in the field of Computer Science and Information Technology. Very few of the informants indicated that they used articles from journals, when gathering information. Some informants' equate journal articles with sources in printed formats. All respondents search the Internet for information and would have read through all the web pages retrieved, which included sites from universities, research projects, development organizations and online journals. These sites also contained many journal articles. Informants seemed to trust the authoritativeness of articles they found through the Internet. A numbers of informants do realized that the articles that they used were articles from reputable journals. They do know that an article goes through various scrutiny and editing processes before it gets published. Some of the informants did not realize this until they were told. In relation to this, informants were asked, why they do not just search the online databases provided by the university library. Some informants did not know about this service and those who knew

commented that searching the online database was cumbersome. For them the searching mechanism is not user friendly.

**(g) Surveys and Interviews**

The final year project allowed the informants to utilize various methods in gathering information for their projects. In certain cases, surveys and interviews seemed to be the most appropriate mechanism in order to gain information required to design the system proposed for their projects. Figure 4 indicates that some informants do use these methodologies apart from getting information from the Internet, past years' reports and books. Informants R9 and R13 distributed questionnaires to their target audience via e-mail, while R3 and R11 distributed their printed questionnaires to a small number of randomly selected respondents.

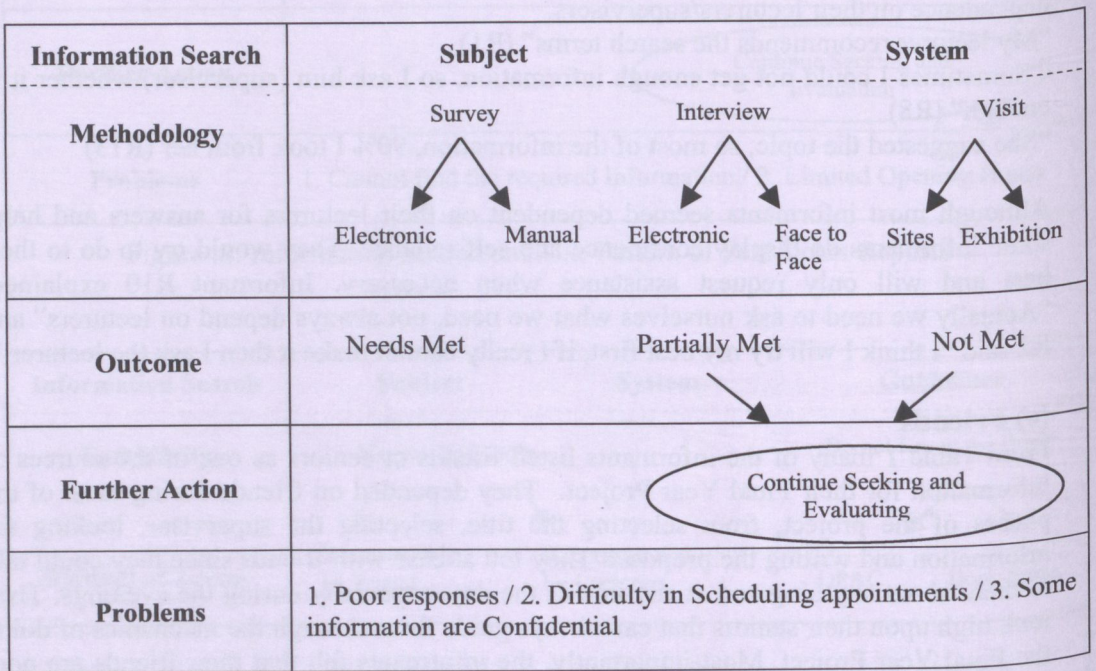


Figure 4: Information Search and Use Patterns when Using Survey/Interview/Visits

Informants learned how to conduct surveys to gather information through various ways. R11 explained that she learned to conduct her questionnaires through her reading of the previous final year reports. For R9 she learned from her "System Analysis and Design" course while R3 indicated from her "Expert System" class. Although appropriate sampling techniques were not used, informants seemed happy that they were able to gather pertinent feedback for their system design. They considered the respondents of their questionnaire as their end users and these feedbacks were regarded as crucial.

Several informants, in their quest to gather information about their end user needs and requirements, carried out face-to-face interviews. Informants R3, R6, R7, R8, R12 and R13 realized that the best way for them to be able to understand how the systems that they were proposing should function, was by interviewing the end users. They learned this from their "System Analysis and Design" course. Although they were able to gather information from the interviews, getting some specific details sometimes proved to be difficult.

These were due to various reasons such as most of their respondents do not treat them seriously, especially when they introduced themselves as students doing a Final Year



Project. Getting a second round interview to obtain more information was more difficult for some of them. Some were only able to interview clerks and not the officers' in-charge because some organizations do not wish to reveal certain work processes.

Despite all these problems, some informants still felt that they could gain a lot of information from interviewing the end users. R7 indicated her best source of information as follows, "The source, I think best is probably the interview because that's where you can get real data, know how the system should really function, because at the end of the development of my system, these people are going to be the end user". Figure 4 illustrates how surveys and interviews act as source of information for informants. Due to all the hindrances mentioned above some informants do not wish to conduct interviews especially if it involves professional people. R11 initially wanted to interview some doctors but put it off because she was asked to send her proposal and a letter seeking approval and this would takes time. R3 tried to e-mail some experts but she did not receive any response.

#### **(h) Visits**

In order to visualize the system they were proposing, some of the informants such as R3, R7, R8 and R12 visit exhibitions or sites that were able to give them better insights. They understood from their 'System Analysis and Design "course and other courses too, that a visit was a good method of obtaining information. Some of the informants felt that such visits were very useful, especially when they were able to ask questions and get answers, although not all them were able to get the cooperation from the sites visited. Figure 4 illustrates how visits can be a source of information for informants.

### **5. Sources of Information Least Utilized**

This study also found that many potential sources especially those provided by the library were not popular with the informants. Only one informant used the CD-ROM while very few used the online resources that the library provides through its' portal. Since most of them do not visit the library often, the CD-ROM collection was hardly utilized. The online databases were mostly on the campus network, so searching can only be carried out on campus. Informants also claimed that the searching method and procedures of the databases is not user friendly. This led to the preference of using the Internet. Table 1 also indicates that none of the informants use indexes, abstracts or government information. Some informants explained that they do not know what the indexes and abstracts are used for, but those informants that understood did not see the use of these for their projects. They would rather get the information directly than go through any indexes or abstracts. Informants also indicated that they do not need government information for their Final year Project.

### **6. Evaluation of Information**

During the process of gathering and using information for their project, informants looked at various resources. Some felt being overloaded with information while some complained of not being able to gather enough information, or indicate a feeling of uncertainty. Basically informants need the ability to evaluate the information, to decide which are useful as well as synthesizing the information. The informants from this study indicated using various criteria of evaluation (Table 3).

Table 3: Evaluation of Information

Evaluation Method	R 1	R 2	R 3	R 4	R 5	R 6	R 7	R 8	R 9	R 10	R 11	R 12	R 13	R 14	Total
Compare with other sources	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
Lecturers/Supervisor	X	X		X	X	X	X	X	X	X	X	X	X	X	13
Friends		X		X	X	X	X	X	X	X	X	X	X		11
Integrity/authority of authors, editors, publishers	X	X	X	X		X	X		X		X	X		X	10
Check the date		X	X	X					X			X		X	6
Compare with lecture notes									X	X		X	X		4
Compare with well known projects		X	X	X											3
Information contains references		X							X						2
Refer to authentic sources like reference text, reference given							X								1
Try the coding (programming)					X										1
Own Analysis						X									1

Table 3 shows that all the informants would compare information that they had obtained from several sources. For them it was very important to verify that the information obtained were correct. Informants were careful with the authority (author and publisher) from whom they have obtained the information. Some would check the authors or publishers of the information. Even when looking at web pages they will only look at .edu or .ac sites. They know that these addresses belong to educational institutions that were credible and authoritative. When asked how one verifies whether information from the Internet is correct, up-to-date and not bias, R2 explained, "Do not trust a particular web site at a glance. I would browse through a collection of web sites, and then I would decide which websites are reliable and not bias. I would compare the information on the Net with certain books to make sure that the information is correct". R6 felt that wherever possible one must be able to perform their own analysis and conclusion, "I look over several resources; I never trust one single resource especially from the net. If the information, which I found from several contents, is similar, then I suppose the information is reliable, up to date and not bias. I also read about what others have to say about the topics. From people's ideas and so called trusted sources they have written, I analyse and form my own conclusion".

Most of the informants would also verify information they obtain with their supervisors. They would try to get help from friends, but endorsement from their supervisors was very necessary. R5 reiterated, "I always go and ask other people's opinion and the most important is my lecturer's opinion". Informants would also compare with previous lecture notes and to well known projects. None of the informants referred their project or get opinion from experts. They considered their own lecturers/supervisors as the experts.

## 7. Libraries

Libraries have been established to facilitate students' academic pursuits. During their Final Year Project, students are expected to utilize the libraries and its services. The informants in this study did not find the university library and its services of help to them. Informants like R8, R9, R12 and R13 clearly indicated that they did not use the library for their Final Year Project. They claimed that the information that they require could not be found in the library. R8 explained, "It's time consuming, the books you are

looking for are not in the library". Most of them say that the collection in the library is not up-to-date. The condition of the library also does not attract them to go to the library. R9 commented "the condition there is too quiet".

R1, R2 and R7 indicated that when using the Library they were able to find books and other materials that fulfill their needs in the library. Unfortunately they also reported that there were too few titles and some of the books they want were often borrowed by others or could not be located on the shelves. Some informants used the library, not to get information but as a good reading or study place. R10 said that occasionally she tried to find the books that she needed but failed. Although it was available on the OPAC, she could not locate them on the shelves. During one of the interviews she said, "Honestly, during these 3 years in campus, I always go to the library, but seldom use the facilities. I just go inside and read my own book. There is not enough reference materials for me as an IT student".

Although some of the informants are aware of the inter-library loan facilities and document delivery services, none utilized them. The reasons given were that it took a long time and they needed the materials urgently. They recommended that the library should acquire new titles in their field as fast as possible. Some informants were not aware that the library offered these facilities. When told that they have been briefed about all the library facilities and services during their first year and during their year one Information Skills class, they responded that they had forgotten and they should have been reminded about all these services. Informants were asked how the library could help them for their Final Year Project. Some of the responses were negative and showed little understanding of the functions and services of the library. Among the responses are,

"I do not see how" (R1)

"Get more books" (R2)

"Probably more books, journals and other reading materials" (R7)

However, there were informants like R5 who wished that the library could help by teaching them how to look for information. This highlighted the issue that informants do not understand the function of the library and the librarians.

## 8. Librarians

The University of Malaya library has extensive library services for its clientele. The students were encouraged to approach the reference desk or the Research Division for any information enquiries. From the 14 informants, only one informant discussed her information needs with the librarian. Among the reasons given as to why the librarians were not approached for consultation were; that the librarian on duty always looked busy that they do not wish to disturb them. Informants also felt that the librarians cannot help them as their subjects were technical and the librarians do not know their field of study. R1 explained, "for the librarian, if the term is general, maybe they can help but if the term is technical, I do not think so".

## 9. Ethical Use of Information and Intellectual Property

Informants from this study gathered information from various sources such as books, previous final year reports, on line journals and especially information from the Internet. During one of the online interview informants were asked to explain the term "plagiarism". All informants seemed to understand the term well enough to explain them

although it is obvious that some took the trouble to give the definition that they have obtained from dictionaries and they admitted to doing so. They maintained that they understood them and justified their actions by saying that copying the definition is much easier than explaining it in their own words.

Informants were also able to explain the difference between “fact” and “opinion”. These further strengthened the belief that all informants were aware that plagiarism is wrong. They also understood the importance of bibliographic citations. They claimed that they had learned how to cite references by looking at previous reports; from books or from their lecturers. Not many respondents said that they learned from the information skills course. Respondents were all in agreement that they must cite the references they used. All informants have undergone a one-semester course on cyber law. Understanding intellectual property and copyright laws should not be in question. All of them agreed that they must observe ethics in using the information for their Final Year Project.

Contrary to this, all 14 informants admitted to using pirated software and condone its usage for their academic work. The reasons were various, from high price of original software, saving of time, using for education purposes as they indicated in the following responses.

- “Original software are too expensive, if I fully depend on the original one, a student like me can never afford them. I have to use it or I will never learn Computer Science” (R1)
- “We cannot afford original software, after all it is not being use professionally” (R4)
- “Cheap and it is normal to use in education” (R4)
- “I think it dos not matter when compared to if it is used by a company” (R13)
- “As long as it is not for commercial use “(R10)
- “Students are not developing actual system” (R12).

Although informants admit that they had been using pirated software they seem aware of the consequences. They understood and reiterated that in the future when they are working or running their own business they will use licensed software. They knew that the quality of originals is better and it comes with warranty and upgrades. They know it is a crime as from the following responses:

- “I do feel for those who gets hurt as a result of this, such as Software Company, singers and movie Production Company” (R2)
- “If I am working in a company or having my own business later, I will get the original because the original is more stable and safe with certain additional benefits” (R6)
- “It is a crime; it is not fair for the developer” (R2)

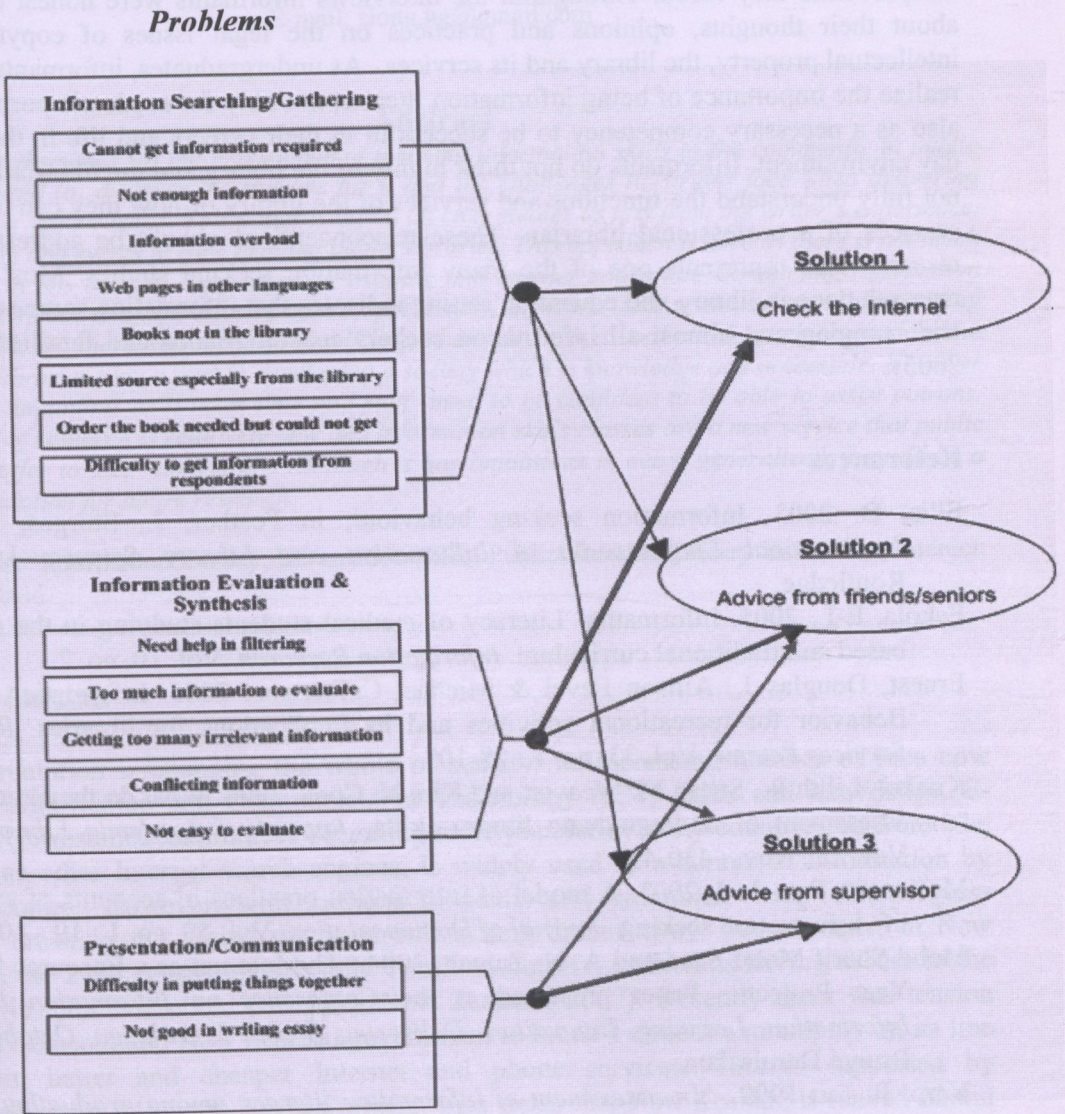
All the informants believed in the copyright law and safe guarding of intellectual property. After all they will also be in the business soon. What is worrying is the “*tidak apa*” {could not care less} attitude or apathy among the informants. As aptly said by R9 and R8, they all understand it, but nobody is following the laws, they believe all the students in their faculty are using pirated software because of the price and the availability of it.

## 10. Problems Faced by Informants

Searching, evaluating, synthesizing and communicating their project proposal was not an easy task for some informants. They faced different types of problems at different junctures of the project. Among the problems they encountered were not getting enough information or information overload, which led to not being able to evaluate and synthesize the information gathered. Some informants also admitted to having faced problems in organizing and presenting their proposals in an acceptable manner. These problems they encountered can be divided into 3 categories; (a) Search and gathering,

(b) Evaluation and Synthesis and (c) Presentation and Communication. Figure 5 illustrates the 3 categories of problems they faced and the solutions taken.

Figure 5: Problems and Solutions



When faced with the problems of not getting enough information; not getting the books they needed or even not knowing how to evaluate the information that they had found, they will turn to the Internet. Even when they have abundance of information they still turn to the Internet. From the Net, they compare to see consistency of the information. If the information they found were consistent they will assume the information is correct. They will also turn to their friends and seniors for verification. Last but not least, they will refer them to their supervisors. They will get help from their supervisors from forming search strategies, verifying and evaluating information gathered and how to systematically shape their proposal. Although they complained that there were not enough books or information, only one of them discussed this need with the librarians.

## 11. Conclusion

This study has enabled an understanding of the information search and use process; understanding respondents' awareness of copyright and intellectual property; problems respondent faced and their opinions on library services. Through the diary entries, online questions and face-to-face interviews, various facets of these issues were discussed

thoroughly by the informants. The 14 informants' come from different ethnic background and gender were able to share their thoughts and experiences while carrying out their Final Year Project. They shared their selection process of research topic, the information sources used, the criteria's used to evaluate the information gathered, and the problems they faced. Throughout the interviews informants were honest and frank about their thoughts, opinions and practices on the legal issues of copyright and intellectual property, the library and its services. As undergraduates, informants seem to realize the importance of being information literate, not only for academic purposes, but also as a necessary competency to be successful in their careers and life in the present day environment. Informants do not think highly of the library and the librarians, and do not fully understand the functions and services of the library or how they can utilize the services of a professional librarian. These misconceptions should be addressed. This research also represents one of the many information seeking studies. Most of these research done in library and education setting indicates that information sources used are wide ranging and almost all information seekers consult friends and families (Ernest, 2005).

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