University Students' Awareness towards Online Access Tools: A Case Study of the University of Tsukuba

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Abstract
This study sought to identify students' awareness and accessibility of the online information access tools (OPAC and a MetaFind system named, TULIPS) provided by the University of Tsukuba Library. In addition, it attempted to identify whether students faced specific difficulties and challenges while using these online access tools for searching the library collection. A total number of fifteen students of different nationalities and cultural/ethnic backgrounds from the University of Tsukuba took part in this study. Qualitative face-to-face interviews were conducted for obtaining information on students' perceptions towards the user-friendliness and functional efficiency of both OPAC and TULIPS – in particular, to examine whether students were familiar with the basic searching and downloading functionalities of these two online access tools. The findings indicated that these student participants in general were aware of the availability of these two online access tools. However, they were unable to distinguish the functional differences between the OPAC and TULIPS. Owing to the language barrier, overseas students tended to face a higher level of difficulty when using both OPAC and TULIPS. Furthermore, students of different academic disciplines and cultural backgrounds tended to have distinctive information needs and expectations. This study also revealed that more hands-on training (provided by the University Library) would be needed if students are to make the best and maximum use of the library resources available.

Keywords: MetaFind, Online Access Tools, OPAC, TULIPS, Academic libraries, University of Tsukuba Library

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Introduction

The University of Tsukuba is one of the leading research universities in Asia, which is globally famous for research in physics, economics, physical education and social science, etc. Every year, thousands of students from all over the world come to study at the University of Tsukuba to get a globally recognized and affordable education. The Library of the University of Tsukuba plays a major role in providing resources in a great variety of formats for supporting the research, and teaching and learning activities of the university community as a whole.

The University of Tsukuba Library's main online access tool is named TULIPS (**T**sukuba **U**niversity **L**ibrary **I**nformation **P**rocessing **S**ystem) – a powerful electronic discovery/ Metafind system, which is designed to enable students to search multiple library resources (including: Online Public Access Catalogue (OPAC) and other electronic resources) simultaneously (See Appendix 1). According to the ODLIS or the *Online Dictionary for Library and Information Science* (Reitz, 2014), a discovery service is defined as "a single interface, providing integrated access to the multiple information resources (catalogues, publishers' e-book and e-journal collections, subscription databases, archival collections, etc.) to which a library has rights". TULIPS could be found in the most prominent place of the University Library's Homepage. With reference to the mechanism of the TULIPS system, it takes a user query, distributes it to a number of electronic sources, and returns the results to the end-user for selection. In other words, the TULIPS system functions like a powerful resources portal, providing a wide array of resources in a great variety of formats for the end-users to access and/or choose from.

As mentioned earlier, the OPAC can usually be found in the most prominent or 'eye-catching' place of a library's homepage. Under the digital era, the collection of an academic library would normally encompass materials of a wide variety of formats, including printed books, digital resources, maps, multimedia and archival materials, as well as CDs and DVDs, etc. Normally a library user would search the OPAC for locating books and other materials available in a variety of formats at a library. The *ALA Glossary of Library and Information Science* (1983) defines OPAC as a computer-based and supported library catalogue. It was originally a database retrieval system designed to be accessed via terminals at the library for users to directly and effectively search for, and retrieve bibliographic records without the assistance of a human.

Literature Review

A number of studies have been carried out at different educational institutions around the world, examining whether users of different nationalities and cultural backgrounds had different levels of awareness, as well as distinctive information-seeking behaviours, when it came to using the OPAC system for accessing resources provided by the library.

Abdullah (2000) carried out a study at Florida State University on the various factors affecting international students' use of OPAC and other information sources. The purpose of this study was to examine the information-searching behaviour of the international students at graduate level. Research results indicated that the

international students at graduate level preferred information sources in online format. Meanwhile, the online catalogue, references and the Internet were found to be the most frequently-used information sources amongst the international students being studied. Abdullah concluded that the barriers to the international graduate students' search behaviour were as identified as follows: limited computer experience and low English language proficiency. On the other hand, cultural proximity had minimal effect on their use of the online catalogue and other information sources. Meanwhile, other factors related to the information-seeking behaviour like gender, stage of study, as well as field of study were factors proven to be more influential.

Karl and Grant (2004) conducted a study on how university students perceived and interacted with different web-searching engines compared to the web-based OPACs. This was a qualitative study, which involved a total number of sixteen students. The findings suggested that the requirements of good OPAC interface design must be re-defined in the face of the new, web-based standards of usability, as well as the changing needs and expectations amongst the end-users.

Nisha and Ali (2011) conducted a study on the awareness and use of library intranet facilities (OPAC and bibliographic databases) available at the Indian Institute of Technology (IIT), New Delhi. The survey results revealed that the end-users in general were aware of the availability of the library intranet. However, it was discovered that the users encountered problems, which were caused by a lack of training and a limited number of computer terminals for accessing the library resources. Respondents suggested that they as the end-users should be taught how to construct effective search strategies, and the proper use of the controlled vocabularies, in order to yield more relevant search results, and make their searching experience more fruitful and less frustrating.

Devendra and Nikam (2012) studied the OPAC and its relations to the user perception at the university libraries in the Karnataka. The aim of this study was to learn about OPAC users' affirmative perception, post-affirmative perception and the level of satisfaction with the library OPAC system. The findings indicated that different user groups tended to have different perceptions and levels of satisfaction towards the OPAC system. Users' perception towards the OPAC system in general tended to be positive; only a small number of the survey respondents reported that they were not totally satisfied with OPAC.

Aims of the Study

This study aimed at examining a small group of local and foreign students' awareness and overall perceptions towards the online access tools provided by the University of Tsukuba Library in Japan. These chosen online access tools are namely TULIPS and OPAC. In addition, this study was set out to investigate whether this selective group of students faced particular difficulties and challenges while using the Library's online access tools.

Research Questions

This study was guided by the following specific questions:

1. Were the student participants aware of the online access tools (namely TULIPS and OPAC) provided by the University of Tsukuba Library?
2. What were student participants' perceptions towards the online access tools (TULIPS and OPAC) provided by the University of Tsukuba Library?
3. Were student participants satisfied with the overall performance of the online access tools?
4. Did the student participants face particular difficulties and challenges when using these online access tools?

Methodology

A small group of foreign students enrolled at the University of Tsukuba were invited to participate in a face-to-face questionnaire survey, to gather both quantitative and qualitative data. The study was carried out at the University of Tsukuba in November, 2014. The researcher of this study was responsible for administering questionnaires to the student respondents at the Central Library of the University of Tsukuba.

The questionnaire items consisted of both open-ended and close-ended questions, asking specific questions: students' level of study; country of origin, awareness, perceptions and ratings towards the overall performance of both TLUIPS and OPAC (For original questionnaire, see Appendix 2).

A limitation of this study was the relatively small sample size. In addition, no observation, in-depth interviews and large-scale surveys were carried out. Hence, the collected results might not represent the views of the whole student community. Despite its limitations, this study has provided many ideas and direction for further (research) in the same area.

Study Population and Respondents' Profile

A total number of fifteen local Japanese and foreign students, representing seven different nationalities were invited to take part in this study (see Table 1, Figures 1 & 2). For details regarding the degree levels, nationalities and fields of study amongst the student participants, see Table 1, Figures 1 and 2.

Table 1. Profile of Student Respondents

Students	Countries of Origin	Fields of Study	Degree Level
01	Yemen	International Relations	Masters
02	Cameroon	Disability Science	Masters
03	Kazakhstan	Humanities and Social Science	Masters
04	Latvia	Humanities and Social Science	Masters
05	Argentina	Economics	Masters
06	China	Humanities and Social Science	Masters
07	China	Library & Information Science	Research
08	China	Material Science	Ph.D.
09	China	Systems and Information Engineering	Research
10	China	Material Science	Masters
11	Japan	Comprehensive Human Science	Masters
12	Japan	Sports Science	Bachelors
13	Japan	Law	Research
14	Japan	French	Bachelors
15	Japan	Science and Technology	Masters
Note: Degree Level = 'Research' refers to students preparing to enter a Masters or a Ph.D.			

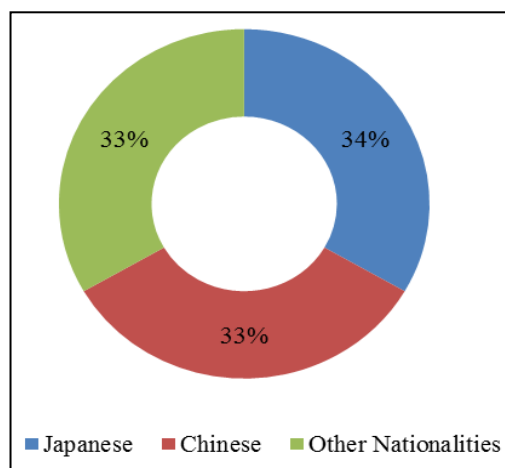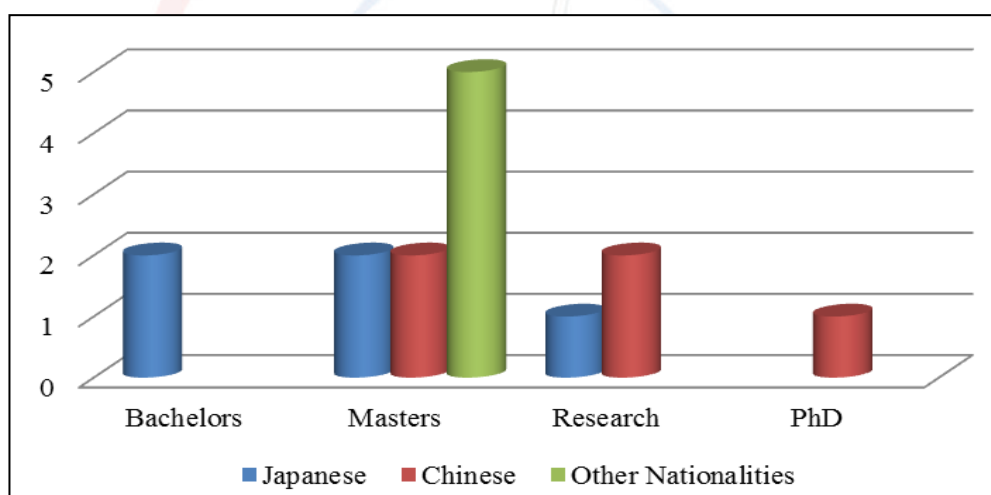**Figure 1. Total Number of Student Participants**

Figure 2. Degree Levels of the Student Participants


Data Analysis and Discussion

Information-seeking behaviour amongst the student respondents

On the questionnaire, the student respondents were asked, *"When you are looking for materials for formal study or research purposes, which of the following access tool(s) do you normally use?"* The findings indicated that out of all fifteen respondents, five students (32%) would use the University Library's Online Access Tools (i.e., both TULIPS and OPAC), while 4 (24%) simply preferred using Google. Meanwhile, two (13%) preferred using Google Scholar instead. Another two (13%) said that they would use a combination of the above methods (see Figure 3).

Meanwhile, two students (13%) said that they would go directly to the University Library, and look for their desired materials via randomly browsing through the physical bookshelves. The remaining respondent (5%) was a Ph.D. student, and she indicated that her preferred method of information seeking was to go through the

reference lists of research papers, or other scholarly websites to track down more specific papers of interest.

Figure 3. Information-Seeking Behaviour amongst the Student Participants
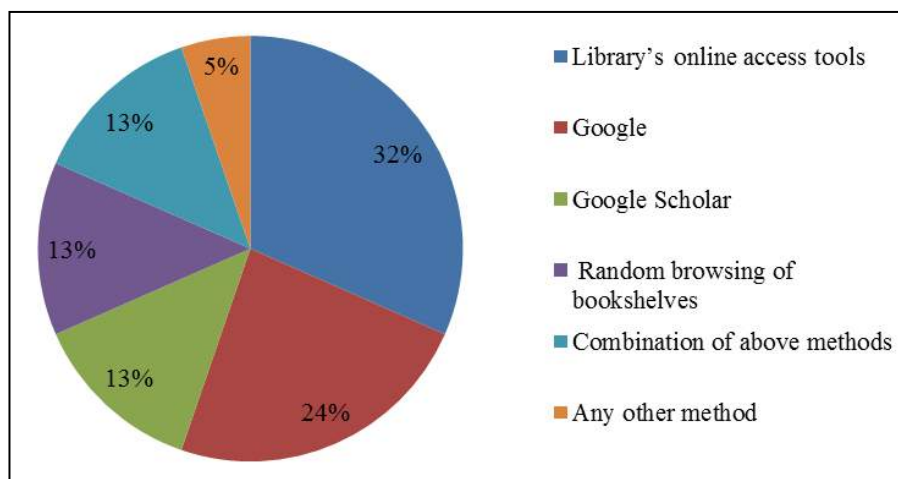
Students' overall awareness of the University Library's online access tools
The second questionnaire item asked the student respondents, *"Are you familiar with the Library's online access tools?"* The findings revealed that a majority of the students were aware of the availability of the online access tools (TULIPS and OPAC) provided by the University Library. For example, thirteen students (87%) indicated that they were aware that the main online searching tool (TULIPS) provided by the University Library. All the student respondents indicated that they had experience in using the TULIPS system for searching book items and journal articles in both printed and electronic format. However, none of them were able to articulate the differences in terms of the functionalities between the TULIPS and the OPAC systems.

Difficulties and challenges identified by students when using the University Library's online access tools

The fifth questionnaire item asked the student respondents, *"Have you ever faced any difficulties when using the OPAC or TULIPS?",* and a list of difficulties and challenges encountered by the student respondents are reported in Table 2.

Table 2. Difficulties Encountered/ Identified by the Student Respondents while Using the Library's Online Access Tools

Difficulties Encountered/Identified by the Student Respondents	No. of Students	Students' Countries of Origin	Percentage (%)
It gives too many irrelevant search results, and I don't know how to limit or screen out my desired search results afterwards…	4	Argentina Cameroon China Yemen	26.7
The English interface does not provide enough information.	1	Argentina	6.7
Not enough hands-on training is provided by the library staff for teaching how to search the interface. Besides, English library workshops are not available.	5	Argentina China Japan Latvia Yemen	33.3
It does not provide a detailed User Manual in English	1	Yemen	6.7
The online HELP options (in English) are very limited.	1	Argentina	6.7
Locational information / floor plans are difficult to read.	1	Latvia	6.7
The display of search results are confusing / not easy to read.	4	Argentina Cameroon China Yemen	26.7
Sometime, the search result would suggest the desired book item is available, but when you actually walk to the bookshelves, you cannot find the actual physical book item.	3	China Japan Kazakhstan	20.0
Too time-consuming to screen out the relevant or desired materials, since I am usually overwhelmed with too many irrelevant search hits.	2	Argentina China	13.3

Student respondents' perception towards the English interface
The University Library plays an important role in supporting the learning and research needs of the students at all levels, in an ever-changing digital environment.

The OPAC and TULIPS systems are usually consulted most frequently amongst the end-users (students), as well as being the first point for accessing the library resources, regardless they are in printed or in digital format. Given the fact that an increasing number of foreign students coming to study at the University of Tsukuba, it is therefore important to investigate whether these foreign students face particular

difficulties and challenges when using the English interfaces of the Library's online access tools (See Appendix 3). For a list of comments given by the student respondents regarding the overall user-friendliness of the English interfaces of both TUPLIS and OPAC, see Table 3.

Table 3. Foreign Students' Comments towards the English-Language Interfaces of both TULIPS and OPAC

Student Respondents' Comments	Students' Countries of Origin
The interfaces seem user-friendly, but when you actually start searching, it is kind of difficult… because there is simply not enough information in English for guiding the user.	Yemen
[I am] comfortable using the English-language interfaces of both TULIPS and OPAC.	Cameroon Kazakhstan
Japanese and English versions are not the same and they are not compatible with each other.	Latvia
The [English interfaces] of both TULIPS and OPAC need to give more HELP options; and also need to provide more detailed instructional information in English.	Argentina
Should modify the interfaces [of both TULIPS and OPAC] to match with the needs and expectations of the foreign students, who have not mastered the Japanese language.	Latvia
Generally speaking, the English interfaces [of both TULIPS and OPAC] are user-friendly…	Argentina Cameroon Kazakhstan Latvia Yemen

Comments listed in Tables 2 and 3 revealed that a majority of the foreign students faced difficulties with both TULIPS and OPAC, as both systems lack adequate instructional information in English for guiding the end-users how to navigate through both systems' interfaces. For example, both interfaces do not provide a detailed and easy-to-follow online manual or HELP options in English – to give assistance to these foreign students, so that they could make good and maximum use of the library resources available.

TULIPS is currently being put in the most prominent and eye-catching place of the Library Homepage – for this reason, TULIPS is expected to be the first point for accessing the library materials. At the same time, the student respondents in general were unable to identify the functional differences between TULIPS and OPAC. Given the fact that TULIPS is such a powerful online harvesting tool, and is capable of searching multiple resources concurrently, these foreign students could be easily overwhelmed with a large pool of irrelevant search hits. Unfortunately, the TULIPS interface does not provide a proper user guide in English for teaching these foreign

student users how to use the "Limit Search" option to screen out the relevant results – they could easily end up being confused or frustrated, especially when they are not experienced library users, or not have mastered the Japanese language.

### *Request for assistance from University Library staff?*

Questionnaire item 3 asked the student participants, "*When you are using TULIPS / OPAC, do you normally need assistance from the library staff?*", and a number of the foreign students indicated that they were reluctant to seek help from the University Library staff, as they (Japanese library staff) are unable to communicate with them in English. For this reason, these foreign students would normally choose to walk away with their problems and frustrations, as they felt uncomfortable approaching the non-English-speaking library staff for their assistance.

Student respondents' overall satisfaction towards the online access tools

Questionnaire item number 8 asked the student respondents, "*What do you think about the overall interface design of the OPAC / TULIPS?*", and student respondents' overall ratings are as follow:

47% of the total student respondents rated both interfaces as "Good";
33% of them rated both interfaces as "Fair";
7% rated "Very Good";
Less than 10% of them rated "Poor";
and 3% rated 'Very poor' interface (see Figure 4)

Figure 4. Student Respondents' Ratings towards the Levels of User-friendliness of TULIPS and OPAC
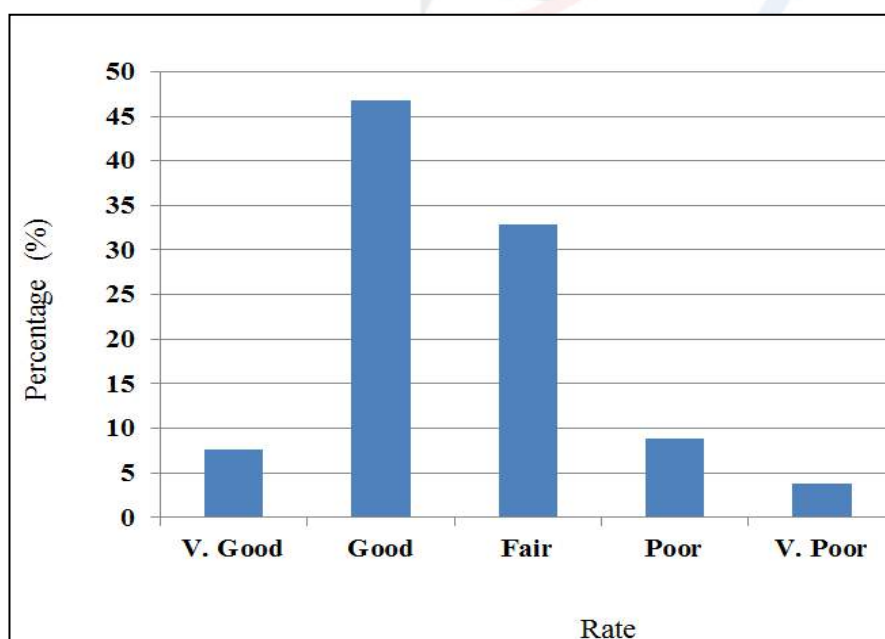
Conclusion

One of the main objectives of this study was to identify the students' overall awareness of the online access tools provided by the University of Tsukuba Library. According to the findings of this study, it was apparent that the student respondents were aware of the Library's online access tools (i.e., both OPAC and TULIPS), and students in general understood that the TULIPS system was designed to enable them to search multiple library resources (OPAC, digital databases, electronic journals, etc.) simultaneously. However, the student respondents were unable to identify the functional differences between TULIPS and OPAC.

The results of the current study also revealed that since students in general did not understand the functional differences between TULIPS and OPAC, they would normally perform searching directly under TULIPS, even when they were only looking for printed book items (held at the University Library), and not electronic articles. Since TULIPS is such a powerful searching/harvesting tool that enables one to search across a number of databases (including OPAC) concurrently, and all search results are integrated into a single set – in most situations, the end-users would end up being overwhelmed with a large amount of irrelevant search results -- especially when the end-user is incapable of constructing an effective search strategy, or did not know how to use the "Advanced Search" option to narrow down their preliminary search results afterwards.

Findings of this study also revealed that the student respondents tended to do their searching by themselves, that is without asking for any assistance from the University Library staff. At the same time, they indicated that proper training on using both TULIPS and OPAC (provided by the University Library staff) would be highly desirable. Unfortunately, most of the staff at the University Library speak Japanese only, and the workshops provided by the University Library are also conducted in Japanese only, foreign students are therefore discouraged to approach the Library staff to request for assistance, even when they face difficulties while using OPAC or TULIPS. Providing instructional information in English next to the OPAC / TULIPS terminals (inside the University Library) might be the most effective and yet immediate solution for overcoming the problem stated above. Furthermore, University Library could recruit Japanese students with good English skills, or foreign students with good Japanese proficiency to assist the full-time library staff to serve at the Reference Services Counter or assist in giving library workshops.

Being able to use both OPAC and TULIPS effectively, proper training is absolutely required, e.g., one needs to learn how to limit the search results (from a large pool of search hits harvested from multiple resources) by formats or how to sort results by date, or relevance, etc. For the reasons stated above, the University Library staff should also consider designing tailor-made training sessions, which could match with the different needs and expectations amongst the student groups from different cultural/ethnic backgrounds, or at different study levels. The University Library should also consider offering small-group orientations or workshops in English catered to these foreign students, based on their academic disciplines upon requests.

According to the results of the current study, it is apparent that the English and Japanese interfaces of both systems (OPAC and TULIPS) have differences in terms of

their functionalities, and are not compatible with each other. For example, some student respondents stated that the instructions and other supporting information on the Japanese interface are much clearer and more descriptive than its English counterpart. Such a problem could be easily eliminated if both English and Japanese interfaces carry the same amount and level of information for guiding the end-users. In addition, the instructions under the "Help Options" for both OPAC and TULIPS should be much more descriptive and clearer. Such an enhancement could be easily achieved by the University of Tsukuba Library staff with minimal costs and effort.

Given the increasing number of foreign students and faculty staff at the University of Tsukuba, it is imperative that the University Library provides services and facilities that could measure up to the diverse needs and expectations of these non-Japanese users. Providing more detailed, correct, and easy-to-follow information for the English interfaces of both TULIPS and OPAC would no doubt encourage both foreign students and faculty members to make good and maximum use of the library resources. Furthermore, it would facilitate these non-Japanese library users to become more self-reliant when it comes to information searching. Providing these foreign students with a positive experience when using the University Library's facilities and resources is equally important. Finally, the University of Tsukuba Library could take more initiatives, in terms of learning from other overseas academic libraries and research institutes – observing how these libraries provide bilingual information to their end-users in facilitating them to achieve scholarship and attaining better learning outcomes.

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Appendix 1

University of Tsukuba Library Online Access

Tools (TULIPS & OPAC)

(Details available at: https://www.tulips.tsukuba.ac.jp/lib/en)

01.	When you are looking for materials for formal study or research purposes, which of the following access tool(s) do you normally use? 1. University Library's online access tools? 2. Google? 3. Google Scholar? 4. Random browsing of the bookshelves without using the OPAC? 5. A combination of the above methods? 6. Any other methods?
02.	Are you familiar with the Library's online access tools? 1. If yes, do you know the differences between the online access tools TULIPS and OPAC? 2. Under what situations would you use TULIPS? 3. Under what situations would you use the OPAC?
03.	1. When you are using the OPAC, do you normally need assistance from the library staff? 2. When you are using TULIPS, do you normally need assistance from the library staff?
04.	1. Have you ever received any training from the library staff to use TULIPS? 2. Have you ever received any training from the library staff to use the OPAC? 3. In order to use either the OPAC or TULIPS well, do you think receiving proper training from the library staff is necessary?
05.	1. Have you ever faced any difficulties when using the OPAC or TULIPS? 2. If yes, please explain in detail what these difficulties are.
06.	1. With reference to the OPAC, do you think its Japanese-language interface is user-friendly and easy to use? If yes, how? *(This question is for Local Students only)* 2. With reference to TULIPS, do you think its Japanese-language interface is user-friendly and easy to use? If yes, how? *(This question is for Local Students only)*
07.	1. With reference to OPAC, do you think its English-language interface is user-friendly and easy to use? If yes, how? *(This question is for International Students only)* 2. With reference to TULIPS, do you think its English-language interface is user-friendly and easy to use? If yes, how? *(This question is for International Students only)*
08.	What do you think about the overall interface design of the OPAC / TULIPS? (Rating : 5- Very Good / 4- Good / 3- Fair / 2- Poor / 1-Very Poor) 1. Overall user-friendliness 2. Efficiency of searching (e.g.: does it take a long time for the search results to appear?) 3. Easy to navigate between web pages and different online functions? 4. Searching capabilities/options (e.g., flexible? versatile?) 5. Function icons (e.g., easy to understand & follow?) 6. Online help options (online instructions are clear & easy to understand and follow?)

09.	Your opinions/ suggestions on either the OPAC or the TULIPS.
10.	Any other suggestions or comments you would like to share?

Appendix 2

Interview Questions

Information about you:
1.   Your field of study?
2.   Your country of origin? (If an international student)
3.   Degree level?

Appendix 3

TULIPS Help Options (in Japanese only)

(Details available at: http://proquest.sunmedia.co.jp/tsukuba/help.html)

OPAC Help Options

(Available at: https://www.tulips.tsukuba.ac.jp/mylimedio/help/help.do?page=toc)