

# การวิเคราะห์ความต้องการสารสนเทศ บริการสารสนเทศ และเทคโนโลยี สิ่งอำนวยความสะดวกของนักศึกษาระดับปริญญาตรี ที่มีความบกพร่อง ทางการเห็น ศูนย์บริการนักศึกษาพิการ มหาวิทยาลัยธรรมศาสตร์

ปราณี อัสวภูษิตกุล<sup>1</sup>

## บทคัดย่อ

การวิจัยนี้เป็นการสำรวจความต้องการสารสนเทศ บริการสารสนเทศและเทคโนโลยีสิ่งอำนวยความสะดวกของนักศึกษาระดับปริญญาตรี ที่มีความบกพร่องทางการเห็น ศูนย์บริการนักศึกษาพิการ มหาวิทยาลัยธรรมศาสตร์ ผลการวิจัยพบประเด็นที่สำคัญคือ นักศึกษาที่มีความบกพร่องทางการเห็นส่วนใหญ่ต้องการสารสนเทศที่เป็นหนังสือเสียงที่มีเนื้อหาสารสนเทศที่ทันสมัยและเป็นภาษาไทยมากที่สุด ด้านความต้องการบริการสารสนเทศ นักศึกษาที่มีความบกพร่องทางการเห็นทั้งหมดต้องการใช้บริการห้องสมุดหนังสือเสียง หนังสือเบรลล์ และบริการวิชาการ ในด้านความต้องการเทคโนโลยีสิ่งอำนวยความสะดวก นักศึกษาที่มีความบกพร่องทางการเห็นต้องการใช้บริการการวางแผนการใช้เทคโนโลยีสิ่งอำนวยความสะดวกเป็นรายบุคคลมากที่สุด

**คำสำคัญ:** ความต้องการสารสนเทศ บริการสารสนเทศ นักศึกษาที่มีความบกพร่องทางการเห็น  
ศูนย์บริการนักศึกษาพิการ

---

<sup>1</sup> สาขาวิชาบรรณารักษศาสตร์และสารสนเทศศาสตร์ คณะศิลปศาสตร์ มหาวิทยาลัยธรรมศาสตร์

# **Analysis the needs for information, information Services and assistive technology of visually-impaired undergraduate students at Disabled Students Services, Thammasat University**

Pranee Asvapoositkul<sup>1</sup>

## **Abstract**

This study surveys the need for Information, Information Services, and Assistive Technology of undergraduate students with visual impairments who have made use of the Disabled Student Services at Thammasat University, Thailand. This study used the mixed method research design employing questionnaires and individual in-depth interviews. Findings show that students have the highest demand for audio books, especially up-to-date ones in Thai language. In terms of Information Service, all students expressed their needs for Audio books and Braille books and Academic Service. For Assistive Technology Needs, these students would like to use individual planning services the most.

**Keywords:** Information needs, Information services, Visual- impaired students, Disabled student services

---

<sup>1</sup>Division of Library and Information Science, Faculty of Liberal Arts, Thammasat University

## Introduction

*“Education is the most powerful weapon which you can use to change the world”* (Nelson Rolihlahla Mandela, 2013).

In tertiary education, the library is an important place which provides many resources for students including printed, non-printed and electronic materials. However, students with disability, especially those with visual impairment, are likely to have restricted access to this information and services due to their physical limitations. Educational institutions around the world such as the San Diego State University, Umeå University, University College London, and the University of Tsukuba, are aware of these limitations and have established a special center for disabled students. This not only serves as a special library, but also assists in other areas of learning.

The main function of these centers is to provide information resources, which include audio books, Braille books, large print books, teaching materials, E-learning, tactile pictures and three other special services. First, Accessible Library Service allows students to have a quick and convenient access to the aforementioned resources, to convert text into speech or other format students require, to offer reserve book service, referral service and reference service. Second, Academic Service gives students academic advice in areas such as academic writing, presentation skills and other necessary skills. Third, Assistive Technology Service deals with all necessary software and computer programs essential for the students. Students may attend a tutorial or training in using computer programs which assist them to read, listen and write, record the lecture, access information resources via internet. Students can also borrow equipment from the center such as a laptop, Braille notes. Etc.

In the Thai tertiary education context, eleven out of sixteen universities have established a center for students with disabilities (The Office of Higher Education Commission, 2012) and Thammasat University was the first to recruit visually impaired students to further their undergraduate study via quota admission system since 2003 and in 2014, there were 26 students. To facilitate learning for these students, the university established the Disabled Student Service (DSS) in 2005 with six assistant staff members. The center serves as a self-access learning center and provides three main types of service:

1. Information Resources: The center provides audio books, Braille books, and large print books.
2. Information Service:
  - 2.1 Accessible Library Service (to access Audio books, Braille books and large print books)

- 2.2 Academic Service (to provide assistance for issues related to teaching and learning)
- 2.3 Admission Service (to organize an admission examination and recruit new students)
- 2.4 Individual Planning Service (to help students with their study plan and registration)
- 2.5 Test Accommodation Service (to convert tests and examinations into the formats required for each student)

### 3. Assistive Technology Service:

- 3.1 Individual Planning Service (to plan how to best use technology for each student)
- 3.2 Academic Accommodation Service (to provide basic computer programs for students such as JAWS for Windows, Thai Text to Speech-PPA Tatip, OCR-Optical Character Recognition)
- 3.3 Accommodation Borrowing Service (to lend essential equipment to students such as an IC Recorder or laptops)

Given the wide range of services provided by the DSS, it is essential to conduct a study to survey the disabled students' needs for information and services in order that the DSS will have a clearer direction of how to improve its service to suit the students' demand. This study conducts the needs analysis of visually impaired undergraduate students using the service at the DSS center.

## Objectives

The purpose of this study is to analyze the needs of visually impaired students for information, information services, and assistive technology. It also looks into problems and suggestions from undergraduate students with visual impairment who have made use of the Disabled Student Services at Thammasat University, Thailand.

## Research Methodology

A mixed-methods research design using questionnaires and in-depth interviews was used to collect data. A pilot study was conducted with three undergraduate students with visual impairment at Chulalongkorn University

The data was collected in the year 2014 from all 26 visually impaired undergraduate students who enrolled at Thammasat University (15 males and 11 females). The age range was from 19-22 years old. They were studying in various faculties: 10 in Law, 8 in Political Sciences, 7 in Social Administration and 1 in

**Liberal Arts.** All participants had to attend an orientation session, in which objectives of the study were explained, and then signed the Braille consent form.

A questionnaire and interview was conducted in a one-on-one session, which lasted 40 minutes. Each individual questionnaire item would be read to a student who would give an oral response, followed by in-depth interview. Results from questionnaire were analysed by frequency distributions.

## Results and Discussion

Table 1 Needs for information

Students'needs	Frequency N=26	Percentage
Objectives of using information (Students can choose more than one option)	23	88.5
to read further after class	23	88.5
to do a report/research project	23	88.5
to gain more information about a topic	22	84.6
for recreational purposes	15	57.7
Borrowing services		
Content area most needed	8	30.8
Political Science	8	30.8
Liberal Arts	6	23.1
Law	2	7.7
Social Work	1	3.8
Commerce and Accountancy	1	3.8
Foudation Courses		
Media format (Students can choose more than one option)	25	96.2
Audio books	14	53.8
Braille books	9	34.6
Large print books	16	61.5
Recency of information	4	15.4
Current year	6	23.1
Published in the last 2-5 years		
Published before the past five years	22	84.6
Language (Students can choose more than one option)	21	80.8
Thai	7	30
English	24	92.3
French	2	7.7
The use of other information resources other than DSS		
Yes		
No		

**Information needs:** The findings show that the most important objectives for using information resources is to read further after class, to do a report/research project and to gain more knowledge about the topic, which is similar to Xayasithivong and Sirichote's (2010) findings. of content area In terms, students expressed the highest demand for resources in liberal arts and political science, followed by law, social work, Commerce and Accountancy and foundation courses, which lends support to Adetoro's (2010) study showing that students with visual impairment in Nigeria had the highest demand for liberal arts, Also Bhakdibutra (1989) suggested, students may not limit their interest to the academic disciplines they are currently studying but expand to other fields. In terms of language choice, interestingly, students do not limit themselves to resources in Thai but show quite a high demand for resources in English.

Audio books are the most popular category for the students at Thammasat, which is similar to findings of British Columbia College and Institute Library Services survey (1998), Ghesquiere and Laurijssen (1999), and Adetoro (2010). Some students explained in the interview that they were not born blind, so they did not yet have the time to learn how to read and write Braille. Audio books are the best option as they are easily and conveniently accessed. However, the findings are in contrast to Atinmo (2007), which found that Braille books are the most popular category in Nigerian context because the budget allocated is low and Braille books have lesser production cost than audio ones.

While all 26 students mainly used services provided by the DSS, almost all of them depended on services from other centers within the university such as the Puey Central Library (22 students), and the Rajanakarin Self-Access Center (12 students). The main purpose of visiting other centers was to borrow some printed materials from those centers and request the DSS to turn them into the audio books. Other purposes were to find a recreational space and to make some friends. Seven students revealed that they visit other libraries outside the university especially the National Library for the Blind and Print Disabled and Wiriya Namsiripongpun Library with the main purpose of turning the printed materials into audio books as the DSS alone could not produce audio books to meet the demands of all students. On top of these services, students used the 1414 Auto service hotline, foundation for the blind to listen to audio textbooks, novels, news and entertainment information.

Table 2 Information services needs

Information services	Frequency N=26	Percentage
Information services used (Students can choose more than one option)	26	100
Accessible library service	26	100
Academic service	26	100
Admission service	12	46.2
Individual planning service	12	46.2
Test accommodation service		
Ways of contacting the centre (Students can choose more than one option)	26	100
In person	14	53.8
Facebook	13	50
Telephone	9	34.6
Line	5	19.2
Email	8	30.8
Knowledge of staff	12	46.2
Very good		
Good		
Problems in using information services (Students can choose more than one option)	17	65.4
Inadequacy of information resources	13	50
Inadequacy of staff members		

**Information services needs:** The most frequently used services include Accessible Library Service, Academic Service and Admission Application Service, similar to other leading universities in other countries such as Student Disability Services, The San Diego State University-SDS-SDSU (2014), Student Disability Coordinator, Student Services, Umeå University (2014), Student Disability Services, University College London (2014), and Office for Students with Disabilities, University of Tsukuba (2014) etc.

For the channels students use to contact the staff members when they need information resources, all students prefer to come to the center in person, despite the inconvenience of travel, because they have a chance to converse with staff members and friends directly. Other means of contacting the center include facebook, telephone, line application and email respectively. As stated in Jitjakool (2010), visually impaired students tend to increasingly use online options especially emails to communicate with target groups and opted for voice command function via emails (Maneengam, 2010).



Regarding staff members, most participants are impressed by good service, but state the major problem is the inefficiency of producing information resources to meet the students' demand, especially audio books, Braille books and large print books. The center cannot produce the whole textbook before the beginning of the semester in case where lecturers change the textbooks and do not inform the DSS in advance but can only distribute a few chapters to the students each time. Another difficulty is the inability of staff members to convert graphs, charts, statistical data and pictures into audio books format. This problem is also in line with Atinmo (2007), who found that librarians in Nigeria lack essential training and skills to read mathematics and scientific symbols and cannot produce information resources in time. In addition, the center may consider liaising with all lecturers to get a copy of the most updated version of all textbooks for foundation courses before the beginning of the semester. The lecturers had to submit all the relevant materials to the center by email two weeks before the semester starts.

Table 3. Assistive technology services needs

Assistive technology services	Frequency N=26	Percentage
Assistive technology services (Students can choose more than one option)	26	100
Individual planning service	26	100
Academic accommodation service	21	80.8
Borrowing service	13	50
Classroom accommodation service		
Ways of contacting the center (Students can choose more than one option)	26	100
In person	6	23.1
Facebook	6	23.1
Telephone	3	11.5
Line	1	3.8
Email	10	38.5
Knowledge of staff members	10	38.5
Good		
Average		
Problems in using assistive technology (Students can choose more than one option)	26	100
Virus infected computers	15	57.7
Problem in using defected		

**Assistive technology services needs:** Based on the results from the questionnaires, all participants are quite satisfied with the Individual planning service and Academic accommodation service. In the interview, some mentioned specific programs that are useful for them e.g. JAWS program for Windows to facilitate their access to information resources in other foreign languages; Thai text to Speech (PPA Tatip) is compatible with Thai language; and the OCR-Optical Character Recognition is particularly useful. However, some programs need further improvements such as Kanya, a sound conversion program, in which some words are incorrectly transcribed, especially homophones and homonyms.

While most participants using Assistive technology service agreed that virtual communication such as Facebook, Line application and emails are a good options for contacting the center when they want to request the service, they chose to come to the center in person reasoning that they could meet other friends, staff members and form their own community (Thaiyamart, 2009; Jitjakool, 2010; and Maneengam, 2010).

In terms of staff members' capacity to master new technology, most participants observed that staff members have sufficient knowledge to assist them to complete their tasks but added that staff members of the center should attend further training to improve their skills and to keep abreast with current technological advancement. Li Zhou et al (2011) and Gaad and Almotari (2013) also addressed the same issue that staff members' ability to master technology is essential. Also, in line with Munemo and Tom (2013) which found a problem in long-distance learning due to limited numbers and outdated computers, this study found that the lack and insufficiency of assistive technology is a major obstacle for students' learning process. The university may consider allocating more funds to purchase and maintain assistive technology services and tools.

## Conclusions and Recommendations

In sum, in order to address the major problems uncovered in this study, the DSS should immediately work towards producing more audio books to meet the demand of the students while at the same time obtaining more up-to-date resources in Thai language, especially those related to foundation courses. The DSS may consider asking for more volunteers to produce more audio books. It is recommended that the DSS should work in collaboration with lecturers to request all teaching materials and textbooks and convert all materials into audio books (or other formats) before the semester starts. Next, comprehensive and long-term staff training programs and professional development should be organized to familiarize them with new techniques of producing audio books, Braille books and large print books. The DSS may consider sending their staff members to attend a course/training organised by a professional organisation e.g. the Association for the Blind or the National Electronics and

Computer Technology Center. Also, the DSS may create an interlibrary loan system and collaborate with other centers to produce and share more resources among each other. Lastly, the DSS should provide better maintenance and preparation of equipment to suit the students' demand, especially virus infected computers and laptops, and allocate more funds to purchase other necessary items from Thammasat University and the Office of Higher Education Commission.

Audio books are the most important resource in high demand for visually impaired students. The DSS should cooperate with other centers to produce more audio books, especially those requested by students and develop a more useful information service. For a long-term project, the center should seek for more cooperation with other organizations which have more qualified staff members such as centers for disabled students at other universities, the National Library for the Blind and Print Disabled, the National Library, the National Electronics and Computer Technology Center to produce more Audio books, develop more user-friendly software, and create a bibliographic database. With such services, disabled students will have a wider source of information and gain knowledge necessary for their future careers.

### Acknowledgements

The authors gratefully acknowledge the financial support received from Research Grant 2016 of the Faculty of Liberal Arts, Thammasat University and to the 26 visually-impaired undergraduate students who participated to make this research possible.

### References

- Adetoro, N. (2010). Reading interest and information needs of persons with visual impairment in Nigeria. *South African Journal of Libraries and Information Science*, 76(1), 49.
- Atinmo, M. I. (2007). Setting up a computerized catalog and distribution database of alternative format materials for blind and visually impaired persons in Nigeria. *Library Trends*, 55( 4), 830-846.
- BC College and Institute Library Services (CILS). (1998). *User survey, 1997/98, preliminary report*. Vancouver, BC (Unpublished).
- Bhakdibutra, J. (1989). Users and information services. In *Introduction to information science unit 5*. Nontaburi: SukhothaiThammathirat Open University.
- Clark, S. &Baggaley, J.(2004, November). Assistive software for disabled learners. *International Review of Research in Open and Distance Learning*,5(3), 6.

- Gaad, E. & Almotairi, M. (2013). Inclusion of student with special needs within higher education in UAE: issues and challenges. *Journal of International Education Research*, 9(4), 287-293.
- Ghesquiere, P. & Laurijssen, J. (1999). The significance of auditory study to university students are blind. *Journal of Visual Impairment & Blindness*, 93(1), 40.
- Goltz, E. (1991). The provision of services to students with special needs in Canadian academic libraries. *Canadian Library Journal*, 48(4), 264-9.
- Jitjakool, I. (2010). *Communication via internet of the blind*. Master's thesis, Dhurakij Pundit University, Department of information communication.
- Maneengam, S. (2010). *Email system for visually impaired people using Thai voice recognition*. Master's thesis, King Mongkut's University of Technology North Bangkok, Department of information technology.
- Munemo, E. & Tom, T. (2013). Access and support of assistive technology for people with visual impairments in open and distance learning institutions (O.D.L) in Zimbabwe. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, 4(3), 553-559.
- Nsehe, M. (2013). *19 Inspirational quotes from Nelson Mandela*. Retrieved from <http://www.Forbes.com/sites/mfonobongnsehe/2013/12/06/20-inspirational-quotes-from-nelson-mandela/>
- Office of the higher education commission. (2012). *Report of survey to the promotion and development services for students with disabilities in higher education institutions 2011*. Bangkok: Bureau of student development.
- The San Diego State University. (2014). Student disability services. Retrieved from [http://go.sdsu.edu/student\\_affairs/sds/10things.aspx](http://go.sdsu.edu/student_affairs/sds/10things.aspx)
- Thaiyamart, U. (2009). *Need, access and utilization of internet media of blind students in Bangkok area*. Master's thesis, Thammasat University, Faculty of journalism and masscommunication Thammasat University. Student affairs division. (2014). *Disabled student services*. Retrieved from [http://sa.tu.ac.th/th/site\\_content/34-disabled-student-services.html](http://sa.tu.ac.th/th/site_content/34-disabled-student-services.html)
- Umeå University. (2014). *Student disability coordinator, student services*. Retrieved from <http://www.umu.se/english/education/student-support/disability-services-and-resources>
- University College London. (2014). *Student disability services*. Retrieved from <http://www.ucl.ac.uk/disability/services/blind-partially-sighted>
- University of Tsukuba. 2014). *Office for students with disabilities*. Retrieved from <http://www.tsukuba.ac.jp/english/education/disability-support.html>

- Xayasithivong, B. & Sirichote, P. (2010, September-December). The use of information of undergraduate students at central library of National University of Laos, Dongdok campus. *Information Journal*, 28(3), 1.
- Zhou, Li, Parker, A., Smith, D., & Griffin-Shirley, N. (2011, April). Assistive technology for students with visual impairments: challenges and needs in teacher' preparation programs and practice. *Journal of Visual Impairment & Blindness*, 105(4), 197.