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USE OF OPEN SOFTWARE FOR INFORMATION LITERACY IN ACADEMIC LIBRARIES: ISSUES AND CHALLENGES

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ABSTRACT

One of the ways to sustain the relevancy of libraries in this electronics era is to prove its stakeholders that a library is still very much useful for acquiring knowledge and virtues. Librarians in Malaysia, specifically in academic libraries, have been initiating proactive approaches in marketing library services & resources for users to access it in a more efficient and effective way. One of the approaches done is by conducting information literacy workshop to educate them on how to use the library online resources, i.e. online databases and e-books, as well as on how to locate physical materials in the library premise. This study is conducted to address current issues and challenges faced by the librarians while using 'zero cost' open software as a tool for interactive teaching, evaluating performance and registration process for information literacy workshop. It is also done to explore on which open software that are currently use for their information literacy workshop. From this point, a list of open software that is/are commonly used by these academic libraries is revealed. A survey is distributed to a group of librarians from selected public and private universities to gather the information. Based on the analysis, the most feasible and reliable open software for information literacy is recommended.

Keywords: Open source software; Information literacy; Academic libraries; Online tools

INTRODUCTION

Nowadays, there are many software applications/tools/products that have been developed and easily obtained online. The type of software is dependent on its licensing and usage coverage. They are categorized as freeware, free software, shareware, freemium and open source software.

- Freeware is defined as any software that is distributed and used for free with full functions available for an unlimited time. However, the ownership of the freeware applications is retained by its developers. It is distributed without its source code to prevent any sort of modification by the users. Plus, the license with which a free program is distributed may permit the software to be freely copied but not sold. In some cases, one may not be allowed to even distribute the software (Beal, 2015; Khanse, 2015).
- Unlike freeware, the source code of free software is accessible to users. Free software also gives freedom to redistribute copies. However to do this, a user must include binary or executable forms of the program, as well as source code, for both modified and unmodified versions (Khanse, 2015).
- Shareware is distributed for free on trial basis only and if a user is still interested to use the software, he/she must purchase a license for it.
- Freemium is a type of freeware. The word is a combination of 'free' and 'premium'. A freemium is always free with limited features, while the premium account comes with a fee for additional products or services that can expand or improve users' experience (Froberg, 2015).
- The term 'open source' is very close to 'free software' but not equal to it. The concept of open-source program relies on the fact that a community of users can review a source-code for eliminating possible bugs in it. Thus, in this way it helps in providing a more useful and bug-free product for everyone to use (Khanse, 2015).

Librarians in academic libraries are looking at ways to move from traditional bibliographic instruction to more comprehensive information literacy (IL) approach. According to Magee and Thomas (2010), many articles in the library literature are currently addressing the issue on how to create and use online tools in order to provide additional learning opportunities for students. Online tools have many advantages over traditional classroom based library instruction. They are available to student any time, providing access to library information and electronic resources in addition to IL skills. Online tools are a cost effective way to reach a large number of people outside the classroom. Students want to use resources at time convenient to them, not necessarily during the traditional reference desk hours only. They expect "increased instantaneous access and more interactive learning" (Reyes, 2006).

Another recent trend was incorporating open source software (OSS) in adapting or locally customizing existing high quality tutorials. OSS offers an attractive solution to the libraries. An OSS system assists in the collection, maintenance, storage and access of library materials which fulfil the primary objective of the libraries (Payne & Singh, 2010). Breeding (2008) described the benefits of OSS such as the freedom of licensure, variety of computing solutions, liberty to examine the logic or workings of the applications and the ability to append or

alter the OSS source code to meet the specific users' needs. It is considered as a means for people to work cooperatively and build systems that encourage greater understanding and greater freedom.

Thus, this article specifically identifies the free software, online tools under freemium package and the OSS (in the next section it is called as 'open software') currently used by Malaysian academic libraries in IL programs. Issues and challenges in the adoption of these open software are also discussed and finally, reliable and feasible software is recommended.

REVIEW OF LITERATURE

Open source software used in libraries

While users' needs are growing, library budgets are shrinking. Libraries are increasingly looking for methods to meet user demands while simultaneously providing less costly quality systems and resources. In this situation, OSS offers libraries an attractive solution. According to Brunelle (2002), software is considered free if users can run the program for any purpose, study how the program works (by looking at the source code), adapt it to their needs (by modifying that source code) and freely distribute modified or unmodified copies to anyone, all without having to ask or pay for permission. Free software is closely related to "open source" or "open software" though not exactly the same.

Payne and Singh (2010) provided a broad overview on the existing presence of OSS in libraries, the functionality and variety of OSS products and the need to further study the OSS technologies in libraries. Furthermore, library professional without technical training can also make use of OSS applications. Many OSS products do not require knowledge of programming in order to implement an OSS product.

The use of QR codes in the library's marketing and advertising has become very common in recent years. During the 2013 to 2014 school years, the Central Michigan University's Park Library utilised QR codes as a tool to track patron inquiries and market library services. They chose to use Microsoft Tag (http: tag.microsoft.com) as the code generator because it was free and allowed to create an unlimited number of codes. However, in 2015, the Microsoft Tag will be changing from a free service to a paid service and they need to investigate other low cost options to continue the project (Berndt-Morris, 2014).

Free web-based tools for IL programs

For years, library instruction served as a baseline training model to teach the basics of IL concepts to students. IL can be defined as the ability to recognise the need for information, to find and use a variety of resources, to evaluate this information using specific standards and to be able to use these competencies in

new environments and situations beyond the classroom (Magee & Thomas, 2010).

Librarians have a significant role to play in enhancing IL programs in an academic setting. Libraries use online instruction to teach a multitude of topics for a range of audiences. They find innovative ways to engage users through the creation of videos, animations, comics and interactive tutorials. Many web-based 'free' tools are available for creating interesting learning for IL modules. This web-based software available uses a freemium model, which means that a basic version is free to use, but librarians need to upgrade to a paid version for additional features. Forbes (2014) listed among the free web-based software programs such as Infogr.am (http://infogr.am), Popcorn maker (https://popcorn.webmaker.org), PowToon (www.powtoon.com), Screencast-0-matic (www.screencast-o-matic.com), Screenr (www.screenr.com), SoundCloud (https://soundcloud.com), ThingLink (www.thinglink.com), Tildee (www.tildee.com) and Zaption (www.zaption.com).

Massis (2011) highlighted a web-based tool that has been developed such as "Screencasts" at University of Washington. This video tutorial was created to support teaching of reference and research skills. Another example is a portal called "Libguides" developed by librarians and faculty members using Web 2.0. This portal provides a richer and more extensive reinforcement mechanism in learning on how to use library resources more effectively.

Open source tool to enhance IL

Magee and Thomas (2010) discussed on customizing an open source program called the Assignment Calculator into a tool designed specially to serve the needs of students at California State University and San Jose State University. This software was originally developed by the University of Minnesota Libraries (http://sourceforge.net/projects/assign-calc). This tool helped students improve time management skills, recognize the needed information and where to find it, evaluate and use this information effectively and ethically and to help improve students' writing. Evidence from students in classes and reference desk indicated that they were impressed by the time table/reminder features and appreciated the wealth of information found in each step.

Making instruction mobile was highlighted and discussed by Bolorizadeh et al. (2012). For academic libraries, this shift towards mobile devices means a necessary adaption of not only digitally reference services, but also enhanced instruction and access services as the technology creates a unique dynamic separate from traditional library technologies. Using video as an instructional tool is an established practice at the University of Tennessee. Many of the basic editors are free including Photoshop, illustrator and power point. Streaming

videos can be viewed easily on mobile devices for the students to access the information anytime from anyway.

The University of Tennessee libraries have also been experiencing with free downloadable Quick Response (QR) codes. Uploaded instructional videos can be linked directly through QR codes. They used free programs such as BeeTagg to create, read QR code and generate statistics with multiple users' access. To read QR codes, mobile devices need a camera and QR code scanning application freely available via internet.

Gura (2014) reviewed the projects on literacy learning with Edmodo conducted at a few schools in Texas and Michigan. Edmodo is an online learning platform that promotes anytime, anyplace learning. Functionally, it allows teachers to post messages, discuss classroom topics, assign and grade classroom, share contents and materials and network and exchange ideas with peers. The beauty of Edmodo is teachers can create an educator account and receive 50 free students account. Students created a video using Animato, a web application that produces videos from photos, video clips and music. These account in Edmodo (www.edmodo.com) and Animoto (www.animoto.com) provide secure sites for students to connect and collaborate, share contents and access class discussion and resources.

OBJECTIVE OF STUDY

The purpose of this study is to explore which open software that are currently used by librarians in Malaysian academic libraries for their IL programs. It is also done to address current issues and challenges faced by librarians while using open software as a tool for interactive teaching, evaluating performance and registration process for IL. Finally, data gathered from the survey will be analyzed and the end results will be revealed.

STUDY APPROACH AND METHODOLOGY

Questionnaire data

Data on the use of open software by librarians in Malaysia was gathered using a questionnaire survey approach that was created using SmartSurvey, a free online software. Link to the survey was provided to potential respondents from various academic libraries through email. The major sets included in the questionnaire are experience in IL and open software, open software that they use and its functions, issues and challenges of the software and finally list of the best preferred open software products.

Response rate

Figure 1 shows the response rate of the questionnaire disseminated to librarians in public and private libraries in Malaysia. It was aimed to have one

representative (librarian) respondent from each library. Out of 27 libraries, a total of 14 libraries responded to the survey. Therefore, the response rate for the public libraries was 42% and 66.7% for the private libraries.

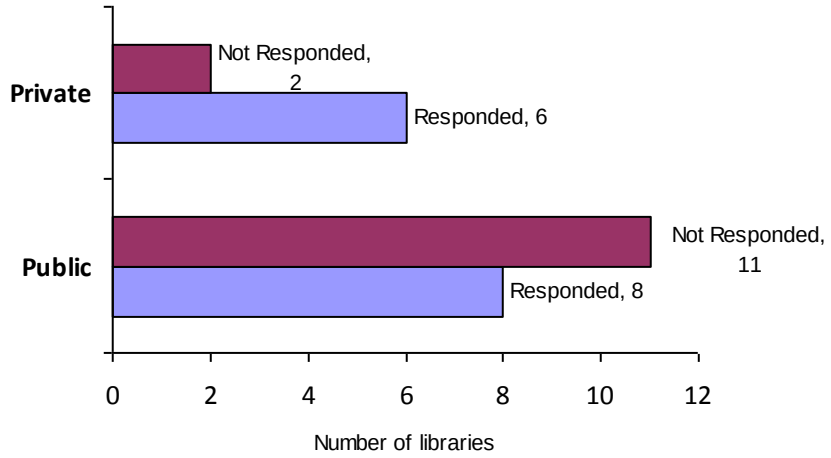

Figure 1: Response rate for public and private libraries

However two libraries have never use any of the open software for their IL program. Thus, only 12 will be counted as complete responses (Table 1) with a total of seven from public and five from private librariesrespectively.

Table 1: List of participating academic libraries

Name of institutions	Public libraries	Private libraries	Use of open software
University of Science, Malaysia (USM)	√		√
Putra University, Malaysia (UPM)	√		√
Sultan Idris University of Education (UPSI)	√		√
International Islamic University Malaysia (IIUM)	√		√
University of Malaysia, Pahang (UMP)	√		√
National University of Malaysia (UKM)	√		√
MARA University of Technology (UiTM)	√		√
University of Malaya (UM)	√		X
Open University Malaysia (OUM)		√	√
Petronas University of Technology		√	√

(UTP)			
Tenaga National University (UNITEN)		√	√
Monash University (MONASH)		√	√
Multimedia University (MMU)		√	√
Islamic University of Malaysia (UIM)		√	X

Note: Highlighted libraries are not counted in the present study.

ANALYSIS AND FINDINGS

Basic attributes of the respondents

There were three (42.9%) male respondents and four (57.1%) female respondents from public libraries, while four (80%) male respondents and one (20%) female respondent were from private libraries. Altogether, the male respondents dominate (58.3%) over female respondents (41.7%) in the survey. In general, the age range of the respondents was between 25 to 54 years old, eight (66.7%) of them was between 35 to 54 years old. Regarding the academic qualification of the respondents, five (71.4%) have a bachelor degree and two (28.6%) have a master degree for public libraries, while for private libraries, two (40%) have a bachelor degree and the remaining three (60%) have a master degree. For public libraries, there were five librarians (71.4%) and two senior librarians (28.6%) who participated in the survey. Whereas for private libraries, there was one librarian (20%), and four senior librarians (80%) who participated. In terms of the involvement in the IL program, there were three (25%) respondents who have been involved for almost three years, four (33.3%) for almost six years and another five (41.7%) for over six years. Table 2 shows the respondents' attributes in these two different library sectors.

Table 2: Respondents' attributes in public and private libraries

Variables	Categories	Public libraries	Private libraries
Gender n(%)	Male Female	3(42.9%) 4(57.1%)	4(80%) 1(20%)
Age n(%)	25-34 years old 35-54 years old	3(42.9%) 4(57.1%)	1(20%) 4(80%)
Academic qualification n(%)	Degree Master	5(71.4%) 2(28.6%)	2(40%) 3(60%)
Position n(%)	Librarian Senior librarian	5(71.4%) 2(28.6%)	1(20%) 4(80%)
Involvement in IL n(%)	1-3 years 4-6 years > 6 years	1(14.3%) 4(57.1%) 2(28.6%)	2(40%) - 3(60%)

Open software for IL

A number of open software products for IL programs were identified. They were used by librarians in academic libraries who handled library classes/workshops/trainings from various IL modules. Among them were GoogleDrive (11, 91.7%), Prezi (8, 66.7%), Surveymonkey (5, 41.7%), Slideshare (4, 33.3%), Powtoon (2, 16.7%), Edmodo (1, 8.3%), Dizzy (1, 8.3%), LibreOffice-Impress (1, 8.3%), Smartsurvey (1, 8.3%), and Typeform (1, 8.3%) libraries have used them. Figure 2 shows the usage percentage of open software by academic libraries in Malaysia for their IL programs.

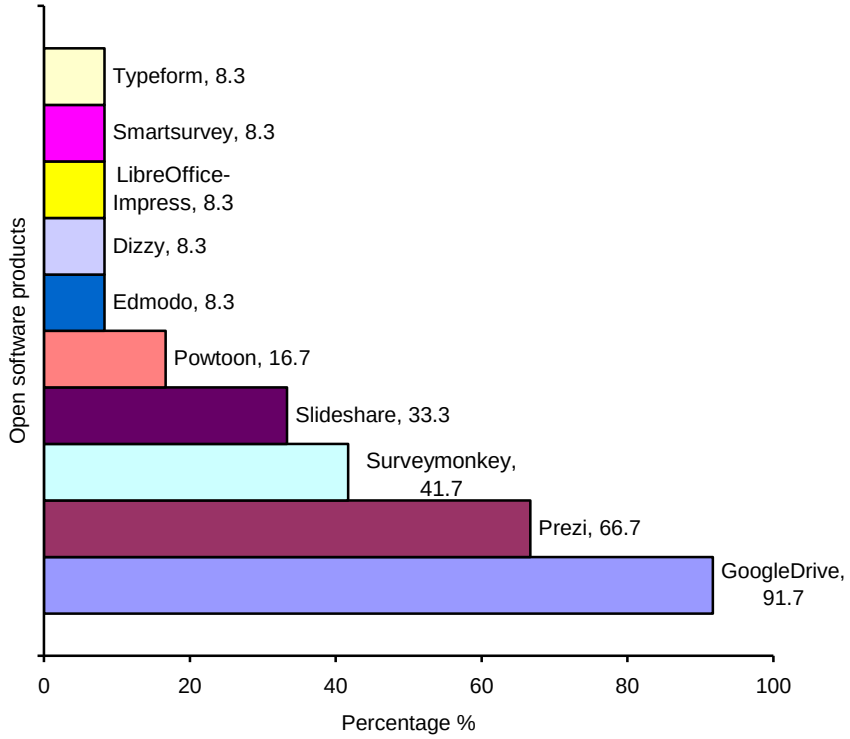

Figure 2: Usage percentage of open software used in IL

In addition, four respondents (36.7%) have listed down other open software that they use for their library classes (Table 3).

Table 3: Other open software for IL programs

No.	Name of the open software
1	QR Code
2	Mendeley
3	Teamviewer

4	Skype
5	Hangouts
6	Wordpress.com
7	Blogger.com
8	ResearchGate
9	Academia.edu
10	Schoology
11	KwikSurveys
12	Moodle
13	Socrative

Usage of the open software for specific functions in IL

Open software is used for numerous purposes and functions for IL. Based on the feedback received from the survey, functions of these open software applications are indicated in Table 4.

Table 4: Usage of the open software by function

Functions	Software*	Usage
Online registration	GoogleDrive (Free) Typeform (Freemium)	7
Interactive presentation	Prezi (Freemium) LibreOffice – Impress (OSS) Dizzy (OSS)	7
Online assessment form	GoogleDrive (Free) Surveymonkey (Freemium) Smartsurvey (Freemium)	5
E-quiz	Edmodo (Free)	4
Interactive multimedia/video	Powtoon (Freemium)	4
Online tutorial	Slideshare (Free)	2
Online collaboration	GoogleDrive (Free) Edmodo (Free)	1

*Source: AlternativeTo website, available at http://alternativeto.net

In order to ease users to register for a library course, librarians have thought of creating an online registration form for them. Open software products that are used for this purpose are GoogleDrive and Typeform. In fact, seven libraries (58.3%) have used the online registration for their users. Other than that, to cater for the Y generation and to attract them to attend the course, educator librarians will always need to update their presentation skills as well as the presentation tools. Hence, seven libraries (58.3%) have taken this initiative to use open software products like Prezi, LibreOffice-Impress and Dizzy when preparing an

interactive presentation to give a 'wow' impact to their users. Besides that, open software like GoogleDrive, Surveymonkey and SmartSurvey have been used for online assessment (5, 41.7%), online quiz like Edmodo (4, 33.3%), interactive multimedia/video like Powtoon (4, 33.3%), online tutorial like Slideshare (2, 16.7%) and online collaboration like GoogleDrive (1, 8.3%) libraries have use them. The other functions as itemised by some of the respondents were to share information with students, to share administrative information among staff, to share big files, for research forum, for chatting, for sending notes, and for data analysis. A number of open software products for these functions, for instance are Slideshare, Edmodo, GoogleDrive, Skype, Blogger and Hangouts. Figure 3 shows the usage percentage of the open software by function.

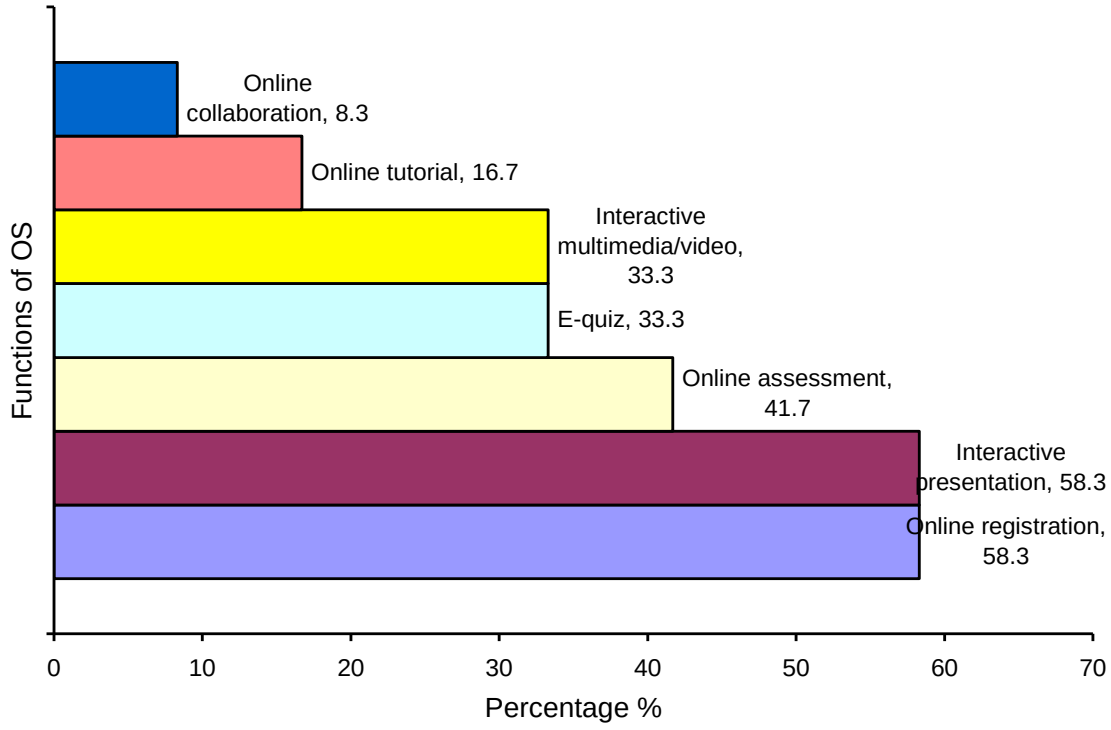

Figure 3: Usage percentage of the open software by function

Issues and challenges of dealing with open software

Among the current issues and challenges while dealing with open software are discussed in more details in this section.

a. Frequency of software usage

All respondents were happy with the open software that they used. There were five (41.7%) of them who wanted to use it frequently and satisfied

with it, while the majority (7, 58.3%) would highly use it in more frequent manner. The mean score is significantly high which is 4.58, while the satisfaction rate is 89.58. Figure 4 shows the percentage of response rate on the frequency of software usage.

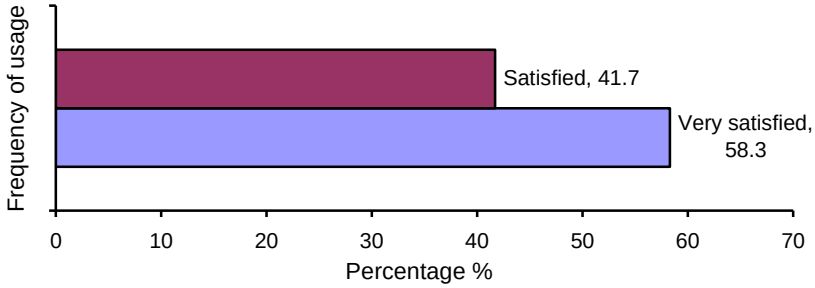

Figure 4: Percentage of response rate on the frequency of software usage

b. Ease of use

Most of the respondents were satisfied with the software product because it was easy to use and user friendly. There were five (41.7%) who agreed and six (50%) who strongly agreed with the point. Only one (8.3%) was neutral. The mean is 4.42 and the satisfaction rate is 85.42. Figure 5 shows the percentage of response rate on easy usage.

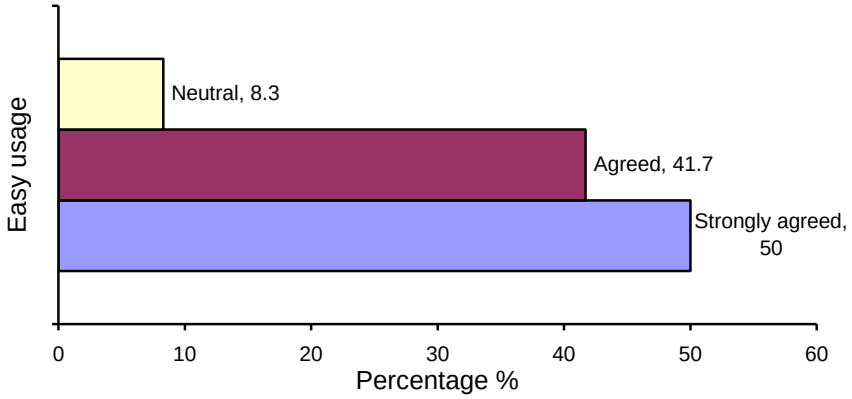

Figure 5: Percentage of response rate on easy usage

c. Functions well integrated

The respondents were mutually pleased with the functions of the product that were well integrated, with a total of three (25%) satisfied and six (50%) were strongly satisfied. Though three (25%) preferred

to be in the middle. For this factor, the mean is 4.25 with the satisfaction rate is 81.25. Figure 6 shows the percentage of response rate on the integrated functions.

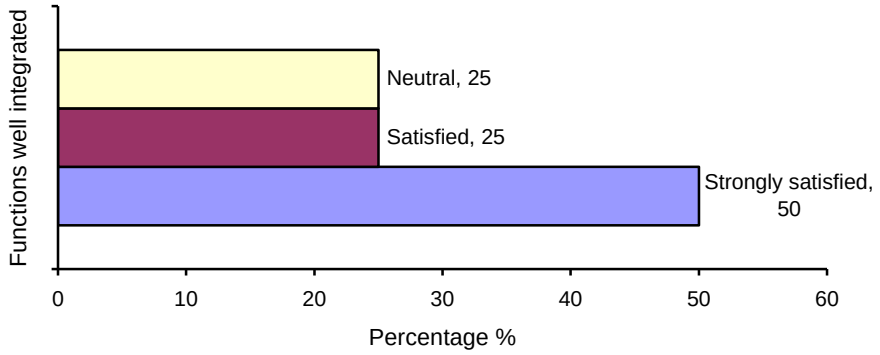

Figure 6: Percentage of response rate on the integrated functions

d. Easy installation

None was dissatisfied with the software installation process. The majority (7, 58.35%) were strongly satisfied, four (33.35%) were satisfied and one (8.3%) was neutral. Its mean and satisfaction rate are 4.5 and 87.5 respectively. Figure 7 shows the percentage of response rate on the easy installation of the software product.

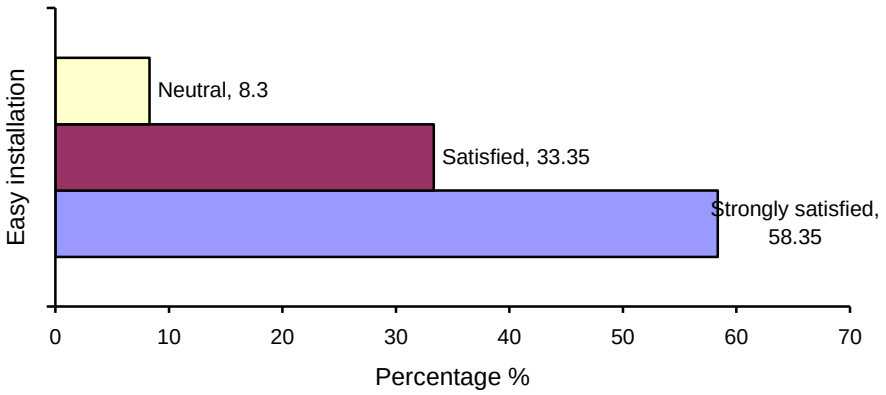

Figure 7: Percentage of response rate on the easy installation of the product

e. Limited functions

In term of the limited functions, two (16.7%) strongly agreed, four (33.3%) agreed, another four (33.3%) were neutral and two (16.7%)

disagreed with the statement. It shows that the majority of them realized functions limitation but they still prefer to use product. Figure 8 shows the percentage of response rate on the limitation of functions.

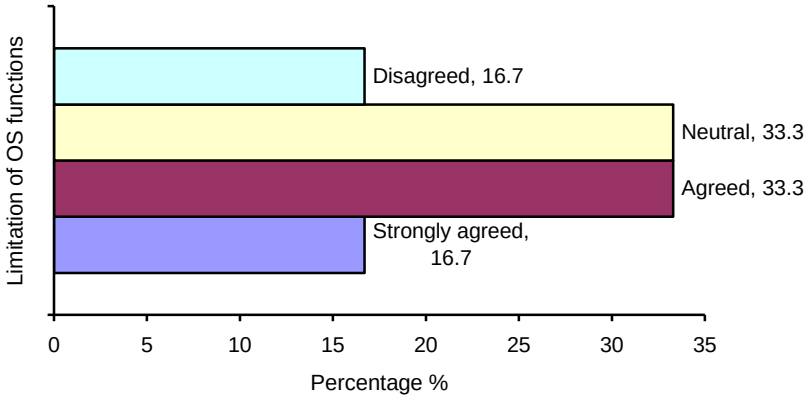

Figure 8: Percentage of response rate on the limitation of functions

f. Need technical support

Six out of 12 respondents agreed (3=25%) and strongly agreed (3=25%) with the need for technical support to teach them how to use the product. Other than that, two (16.7%) disagreed and another two (16.7%) strongly disagreed as they can explore it themselves without a proper training from the expert. While, there were two (16.7%) respondents who were neutral. Figure 9 shows the percentage of response rate on the need of technical support.

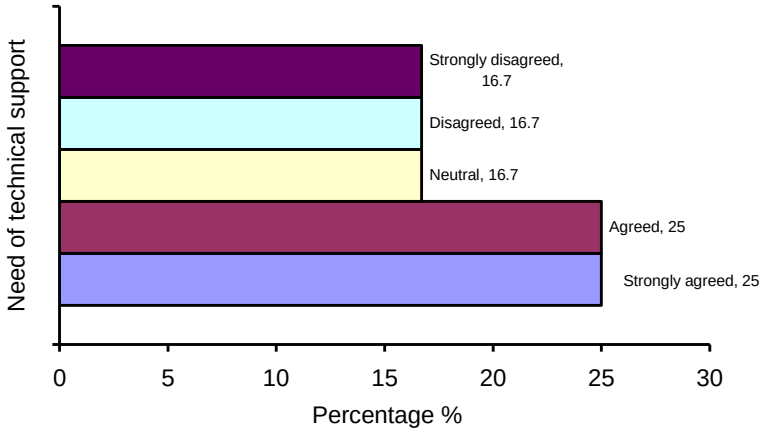

Figure 9: Percentage of response rate on the need of technical support

g. Too much inconsistency

Only one (8.3%) agreed and another one (8.3%) who strongly agreed with the issue of too much inconsistency of the product. This indicates that the product has less inconsistency. However, four (33.3%) respondents neither agree nor disagree. Another five (41.7%) disagreed and one (8.3%) strongly disagreed because they thought that the product is stable. Figure 10 shows the percentage of response rate on the inconsistency of the software.

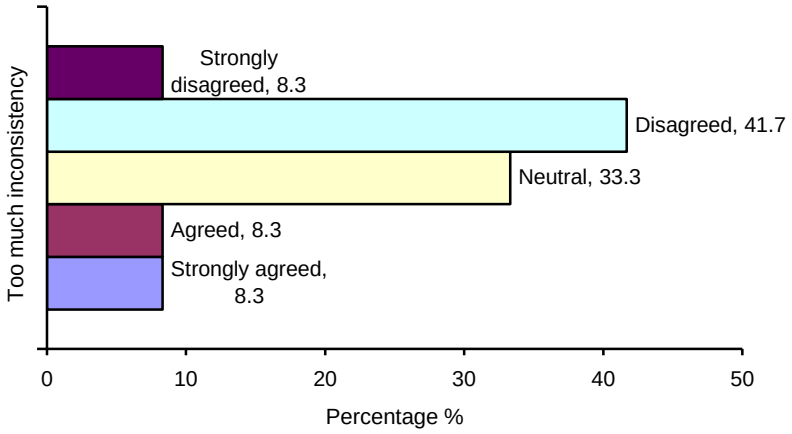

Figure 10: Percentage of response rate on the inconsistency of the software

h. Limited time access

More scores were at scale 1-2 compared when to 4-5, which shows the respondents' positive view on the product. Three (25%) disagreed and another three (25%) strongly disagreed on the issue of limited time access. While, only one (8.3%) agreed and the other three (25%) strongly agreed. Another two (16.7%) were neutral. Definitely, there are some open software products that are free with limited time access and some with no limit but with limited functions. Figure 11 shows the percentage of response rate on the limitation of access.

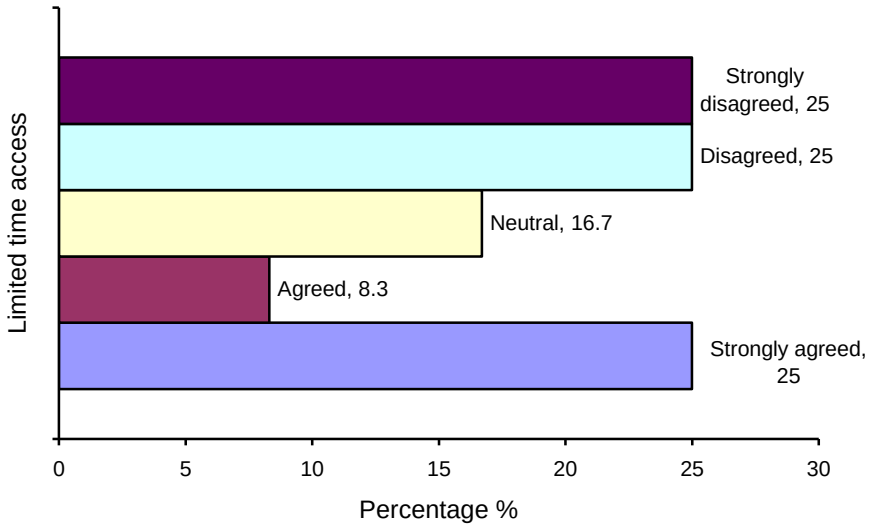

Figure 11: Percentage of response rate on the limitation of access

Open software vs. licensed software

Table 5 highlights some reasons/comments given by the respondents on the reasons on why they prefer to use open software instead of licensed software. These reasons are split into two categories according for the public and private sectors for comparison. Highlighted key terms that were repetitively mentioned by the respondents from both public and private libraries are benefit - good, easy – convenient – portable - no installation, free - no cost, attractive and user friendly, reflect the similarity in the way these librarians perceived it although they were in different sectors. It was as if they wanted to convey a message: "Why we want to bother buying proprietary software while we have an option to use a free but yet a beneficial one?".

Table 5: Reasons on the usage of open software

Public libraries
R1: *"We were done a deep research on those tools since the year 2012. A lot of **benefits** found. Now, we are currently share about the tools via personal coaching*"
R2: "*It is **easier** to generate data and importantly it is paperless*"
R3: "***Free** and **easy** to use*"
R4: *"It is **free** of charge and most of them **no installation** is needed, only use it through online"*
R5: *"Can use different methods and tools in order to **attract** users' attention*

during the class"
R5: "*Need to explore more about the software*"
R6: "*It is **free***"
Private libraries
R1: *"**Convenient** to all, **user friendly** and **free**"*
R2: *"**Easy** to get; **no cost** for basic function; many samples to emulate*"
R3: "*To utilize the software or tools offered by the internet platform in their daily work and for personal matters such as studies*"
R4: "*Of course it is **free**, **easy** to use and very **simple**. **Portability**, can be accessed anywhere anytime using any device*"
R5: "*Mostly are **free** and they do a good job*"

DISCUSSION

Although there are some issues and challenges that people may face while dealing with the OSS, web-based and online tools (term used is *open software*), it does not affect them to still find and employ these applications whether for personal or office use. Based on major findings, all respondents (100%) would regularly use open software for their IL programs where 11 (91.7%) considered it as easy to use, 9 (75%) thought the functions were well integrated, and 11 (91.7%) felt that the installation process was quite easy to set up.

Although it has a number of challenges but not all respondents perceived it as one. For instance, half of them (50%) disagreed with the fact that these products have inconsistencies and have limited time access because it depends on which packages/applications users used. This is the part where they may need to assess and pick the one that is feasible and practical for their daily use.

Librarians may employ any of the open software applications that relates to their routine. But before they decide to use the software, there are some criteria that they need to look into. According to Corbly (2014), among the criteria are: 1) to ensure that the software is free without any cost, royalties, or fees of any kind; 2) easy to use; 3) free from viruses upon downloading; 4) allows for personal and office use; and 5) obtain views from IT people at work before using. It is also important to note that software can change type. Freeware can become shareware, commercial software can change into freeware and so on. There are also developers who always sought to have their customers upgrade the service from free to premium account. The premium account would definitely involve costs but with more added features.

CONCLUSION AND RECOMMENDATIONS

There are some open software products that fulfilled the above criteria, more famous and preferable among most of the respondents such as GoogleDrive, Prezi and Surveymonkey. Thus, the study would provide good

recommendations to the users out there and that these three software applications are among the best open software used for the IL programs. GoogleDrive has many packages inside one Drive. People may use the Google Docs, Google Sheets, Google Slides, Google Forms and Google Drawings with multiple features available. Besides that, it is free of charge, very user friendly and does not require any technical supports from the IT people. Applications like online form, online assessment, online survey, online collaboration and others can be done with these GoogleDrive packages.

In order to attract more users to attend the library's IL programs, one of the factors is to make sure that the slide presentation has a fascination factor so as to make it more interesting and not dull. These days, there are many free software products that are available on the Web for creating interesting presentations such as Prezi, LibreOffice-Impress and Dizzy. Among these three, Prezi received the highest response from the respondents from various institutions due to its easy features.

In addition, after an IL session, librarians may want to get immediate feedback from users who attended the session. Previously, printed assessment forms were distributed to the users. Then, the completed forms were collected, data compiled and results analysed and all this was done manually. But now, people may opt for an alternative which is easy, fast and efficient that is by using free and open software available online. One example of open software that is used for online assessment and online survey is Surveymonkey which received the highest positive rate from the respondents.

Another recommendation is that since libraries are eager to adopt cost effective solutions and are involved in open source developments, this paper would like to suggest an OSS called "Assignment calculator" to be one of the future projects for librarians in Malaysia. This potential OSS can be customized with specific needs and functions which relates to the improvement of teaching and learning activities in local education institutions. As reported by Magee (2010), their OSS project using the the "Assignment calculator" continues to receive positive feedback from faculty members and students because of its functionality. In the near future, they plan to create other educational tools for doctoral students using OSS.

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