

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

¹Zaharah Abd. Samad and ²Norzelatun Rodhiah Hazmi
¹Deputy Chief Librarian
Library, International Islamic University Malaysia
²Librarian
Library, International Islamic University Malaysia

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 software, information literacy, academic libraries, online tools, OSS.*

INTRODUCTION

Nowadays, there are many software applications/tools/products that have been developed and easily obtained online. The software type is depending on its licensing and usage coverage. Among others 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, V., 2015; Khanse, A., 2015).
- Unlike freeware, the source code of free software is accessible to users. Also, free software 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, A., 2015).
- Shareware is distributed for free on trial basis only and if a user still interested to use the software, he/she must purchase a license for it.
- Freemium is one 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, P., 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 more useful and bug-free product for everyone to use (Khanse, A., 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 & Thomas (2010), many articles in library literature are currently address 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 the

traditional classroom based library instruction. They are available to student at 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. Open source software (OSS) offers an attractive solution to the libraries. OSS system assists in the collection, maintenance, storage and access of library materials, which fulfil the primary objective of the libraries (Payne & Vandana Singh, 2010). Breeding, M. (2008) describes 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 mean 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 information literacy program. Also, issues and challenges in the adoption of these open software is discussed and finally, reliable and feasible software is recommended.

REVIEW OF LITERATURE

1. 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, Open Source Software (OSS) offers libraries an attractive solution. According to Brunelle, M. (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, A. & Vandana, S. (2010), provides 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 library’s marketing and advertising has become very common in recent years. During 2013-2014 school years, 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, Microsoft Tag will be changing from a free service to paid service and they need to investigate other low cost option to continue the project (Berndt-Morris, E., 2014).

2. Free web-based tools for IL programs

For years, library instruction served as a baseline training model to teach the basics of information literacy 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 information literacy 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 information literacy modules. This web-based software available uses a freemium model, which means that a basic version is free to use, but librarian needs 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, B. E. (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.

3. Open source tool to enhance IL

Magee, J. & Thomas, E. (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, A., et al. (2012). For academic libraries, this shift toward 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, M. (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 Animoto, 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.

OBJECTIVES OF STUDY

The purpose of the study is to explore on which open software that are currently used by librarians in Malaysian academic libraries for their information literacy 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 information literacy. Finally, data gathered from the survey will be analyzed and the end results will be revealed.

STUDY APPROACH AND METHODOLOGY

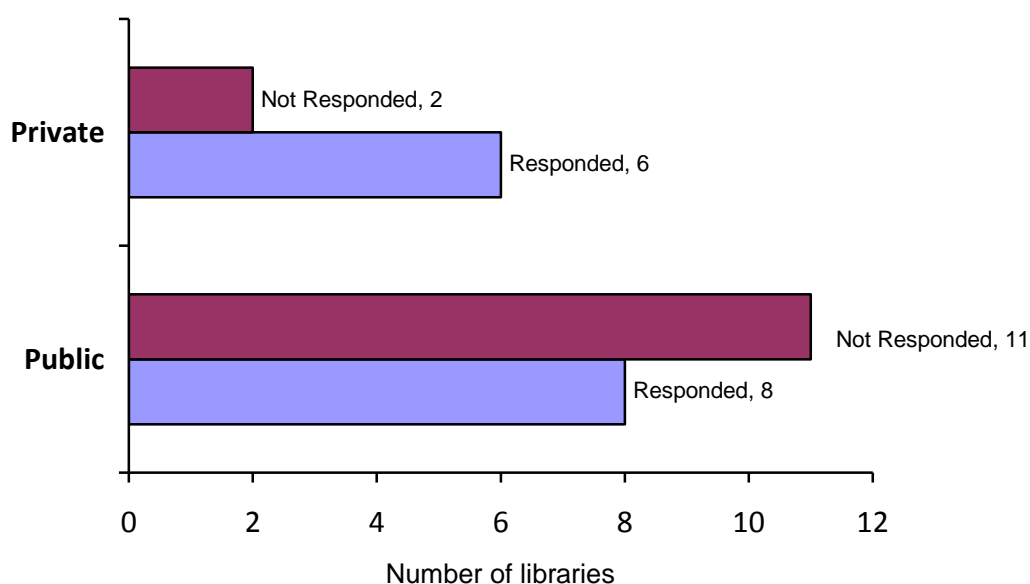
1. Questionnaire data

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 information literacy 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.

2. 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) responded for each library. Out of 27 libraries, a total of 14 libraries have responded the survey. Therefore, the response rate for the public libraries was 42% (number of respondents responded/total libraries = 8/19) and 66.7% (number of respondents responded/total libraries = 6/8) for the private libraries.

FIGURE 1: Response rate for public and private libraries



However, 2 libraries have had never use any of the open software for their information literacy program, thus, only 12 will be counted as complete responses (refer to Table 1) with a total of 7 from public and 5 from private libraries, respectively.

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 (IUM)		√	X

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

ANALYSIS & FINDINGS

1. *Basic attributes of the respondents*

There were 3 (42.9%) male respondents and 4 (57.1%) female respondents from public libraries, while 4 (80%) male respondents and 1 (20%) female respondent from private libraries. Altogether, the male respondents have dominant (58.3%) over female (41.7%) in participating in the survey. In general, the age range of the respondents was between 25 to 54 years old, which 8 (66.7%) of them was between 35 to 54 years old. Regarding the academic qualification of the respondents, 5 (71.4%) have possessed a degree certificate and 2 (28.6%) have a Master degree for public libraries, while for private libraries, 2 (40%) have a degree and the rest 3 (60%) have a Master degree. For public libraries, there were 5 librarians (71.4%) and 2 senior librarians (28.6%) participated in the survey. Whereas for private libraries, there was 1 librarian (20%), and 4 senior librarians (80%) who have participated. In term of the involvement in information literacy program, altogether, there were 3 (25%) respondents who have involved for almost three years, 4 (33.3%) of them have been in the field for almost six years and another 5

(41.7%) were over six years. Table 2 shows the respondents' attributes in these two different library sectors.

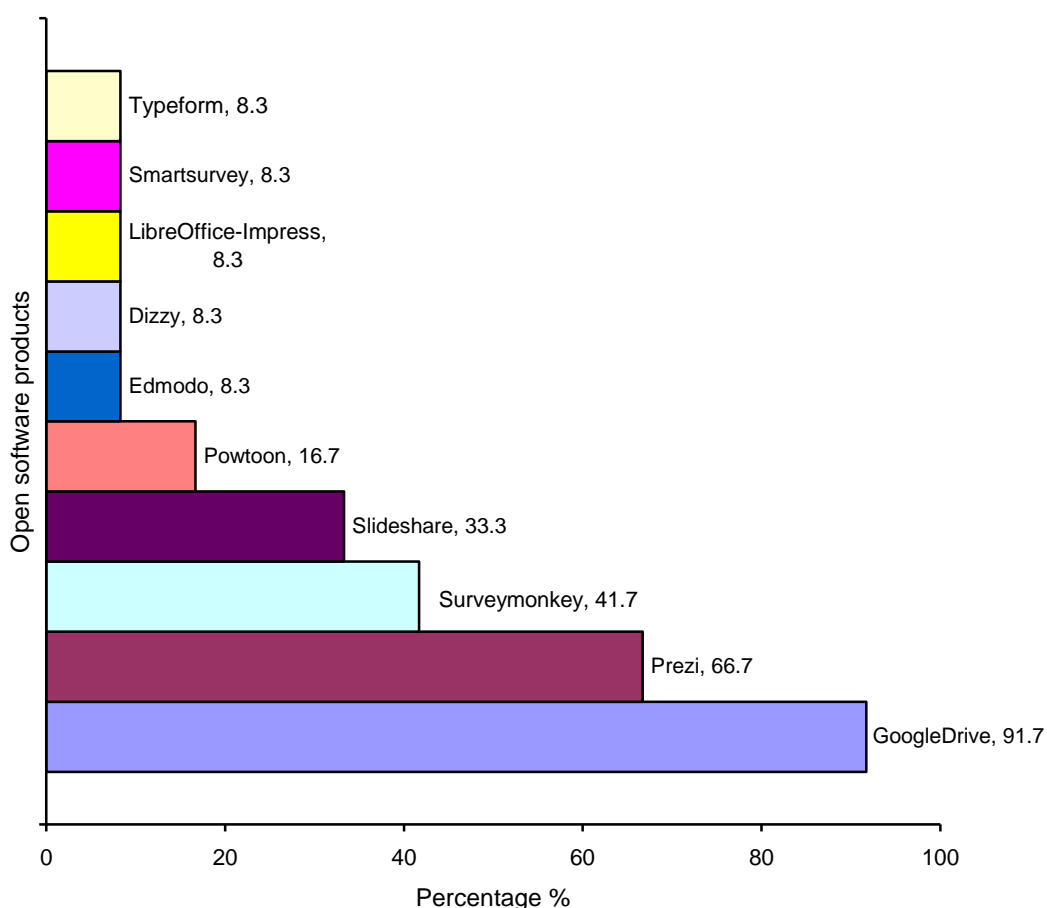
TABLE 2: Respondents' attributes in public and private libraries

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

2. Open software for IL

A number of open software products for information literacy programs were identified. They were used by librarians in academic libraries who handled library classes/workshops/trainings from various information literacy modules. Among others 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 percentage of the use of open software by academic libraries in Malaysia for their information literacy 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 used for their library classes (as shown in 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

3. Usage of the open software for specific functions in IL

Open software are used for numerous purposes and functions in information literacy. 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

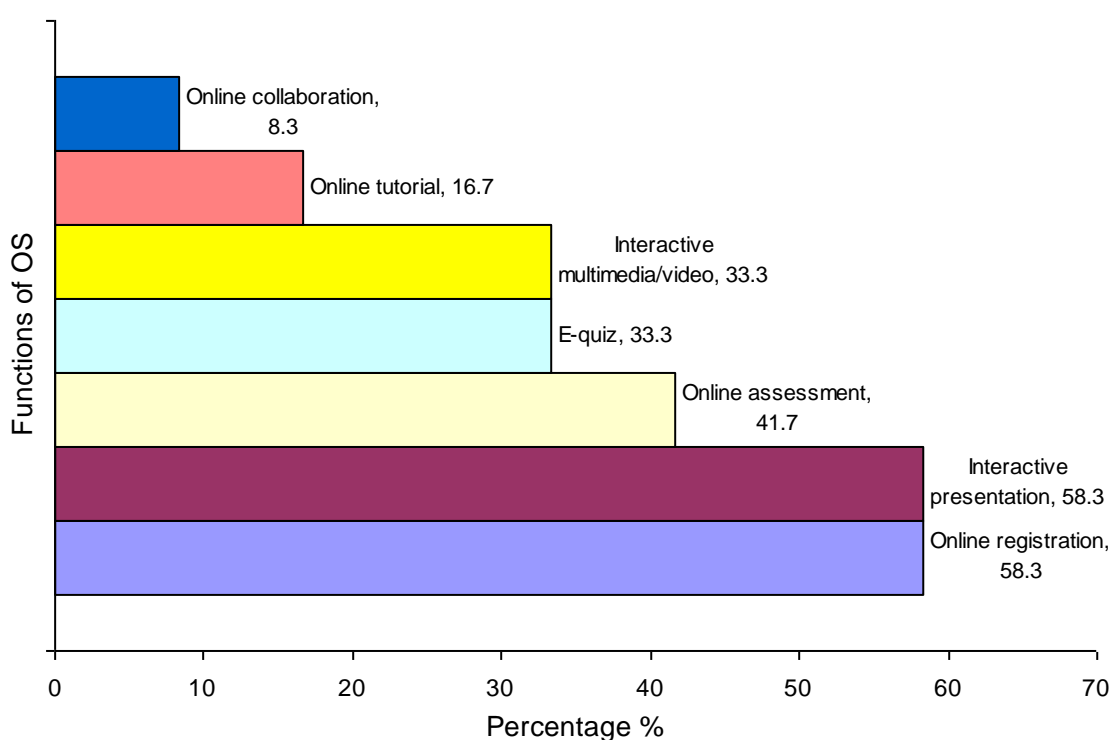
Functions	Software*	Usage
Online registration	GoogleDrive (Free) Typeform (Freemium)	7
Interactive presentation	Prezi (Freemium) LibreOffice – Impress (OSS) Dizzy (OSS)	7
Online assessment form	GoogleDrive (Free) SurveyMonkey (Freemium) Smartsurvey (Freemium)	5
E-quizz	Edmodo (Free)	4
Interactive multimedia/video	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 to them. Open software products that are used for this purpose such as GoogleDrive and Typeform. In fact, 7 libraries (58.3%) have applied the online registration for their users. Other than that, to cater the Y generations 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, 7 libraries (58.3%) have taken this initiative to use open software products like Prezi, LibreOffice - Impress and Dizzy in 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 with 5 (41.7%), online quiz like Edmodo with 4

(33.3%), interactive multimedia/video like Powtoon with 4 (33.3%), online tutorial like Slideshare with 2 (16.7%) and online collaboration like GoogleDrive with 1 (8.3%) libraries have use them. Its other functions as itemised by some of the respondents were to share info to students, to share administrative info 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; 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



4. Issues and challenges of dealing with open software

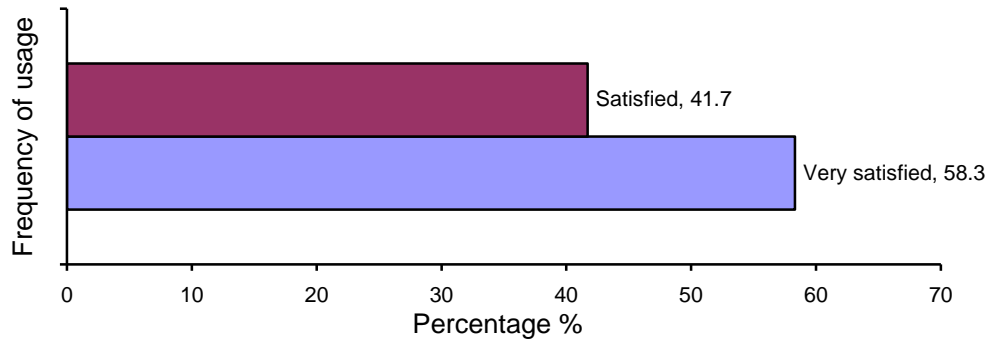
Among the current issues and challenges while dealing with open software are discussed in more details in this section.

4.1 Frequency of software usage

All respondents were happy with the open software that they used. There were 5 (41.7%) of them wanted to use it frequently and satisfied with it, while the majority of 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.

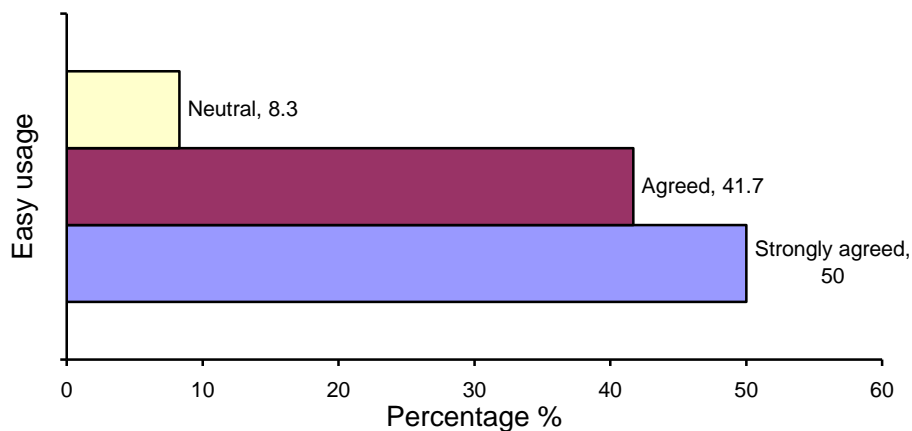
FIGURE 4: Percentage of response rate on the frequency of software usage



4.2 Ease of use

Most of the respondents were satisfied with the software product because it was easy to use and user friendly. There were 5 (41.7%) who agreed and 6 (50%) who strongly agreed with the point. Only 1 (8.3%) was in a neutral stand. The mean is 4.42 and the satisfaction rate is 85.42. Figure 5 shows the percentage of response rate on the easy usage.

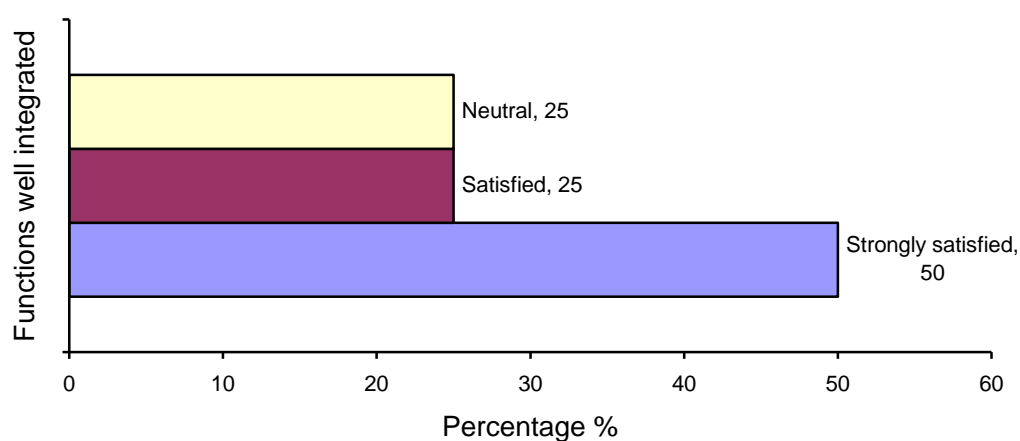
FIGURE 5: Percentage of response rate on the easy usage



4.3 Functions well integrated

The respondents were mutually pleased with the functions of the product that were well integrated, with the total of 3 (25%) of them satisfied and 6 (50%) were strongly satisfied. Though, 3 (25%) of them prefer 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.

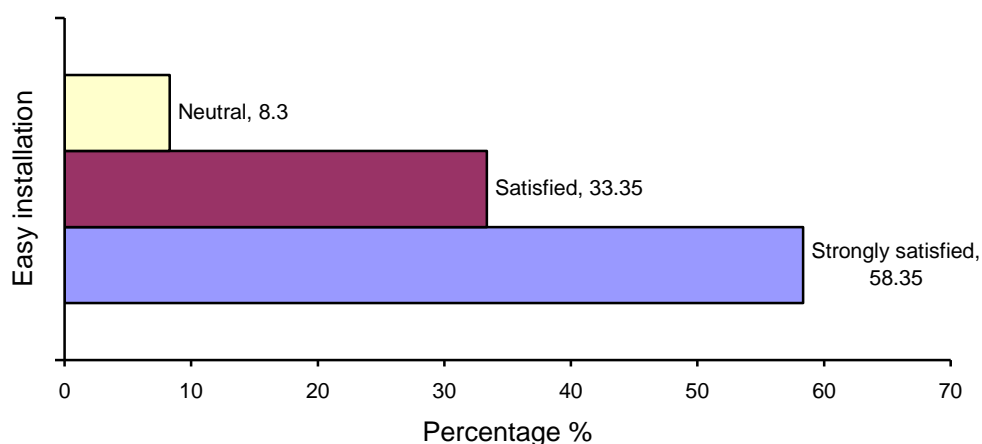
FIGURE 6: Percentage of response rate on the integrated functions



4.4 Easy installation

None was dissatisfied with the software installation process. Majority of 7 (58.35%) were strongly satisfied, 4 (33.35%) were satisfied and 1 (8.3%) was in 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.

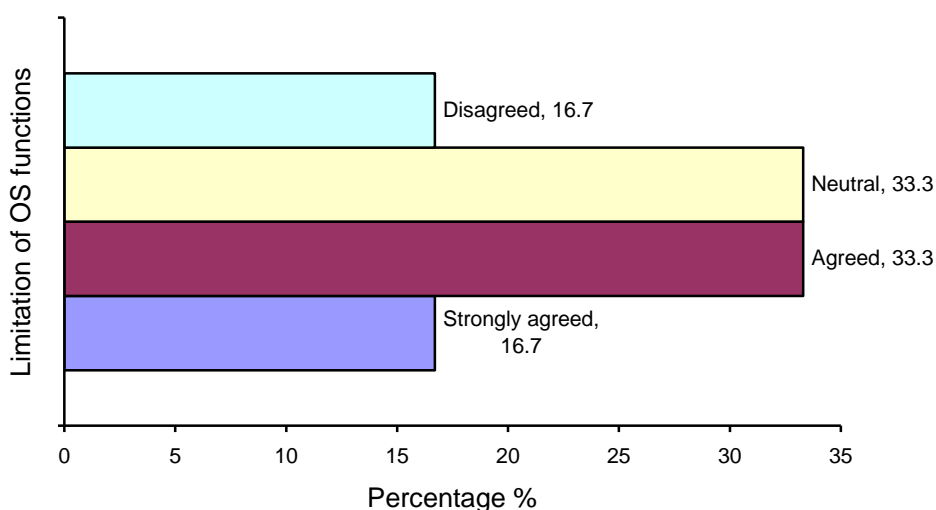
FIGURE 7: Percentage of response rate on the easy installation of the product



4.5 Limited functions

In term of the limited functions, 2 (16.7%) of them were strongly agreed, 4 (33.3%) were agreed, another 4 (33.3%) were in neutral, and 2 (16.7%) were disagreed with the statement. It shows that majority of them realized on functions limitation but then they still prefer to use the software product (as in 4.1). Figure 8 shows the percentage of response rate on the limitation of functions.

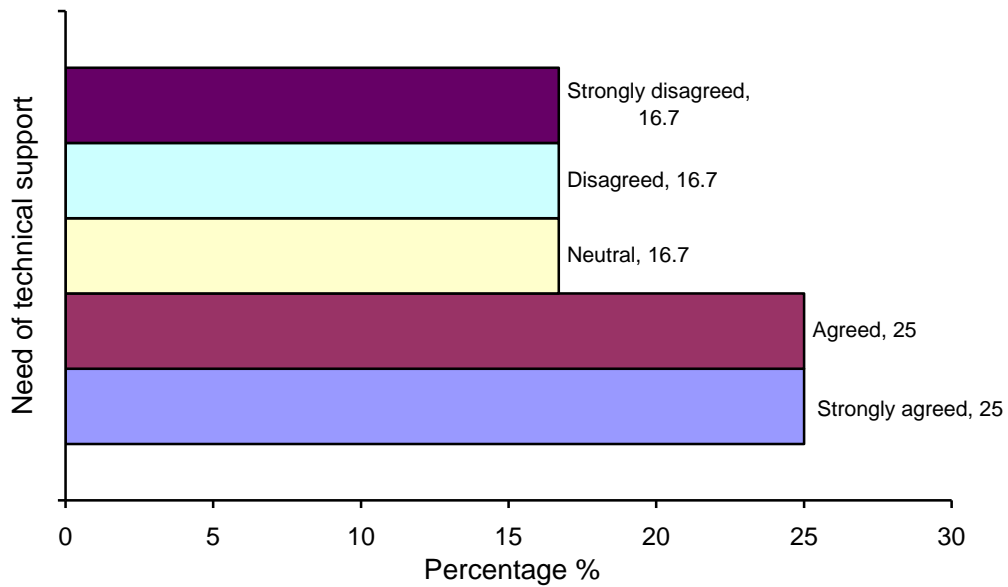
FIGURE 8: Percentage of response rate on the limitation of functions



4.6 Need technical support

Majority of 6 out of 12 respondents were agreed (3=25%) and strongly agreed (3=25%) with the need of a technical support to teach them on how to use the product. Other than that, 2 (16.7%) were disagreed and another 2 (16.7%) were strongly disagreed as they can explore it themselves without a proper training from the expert. While, there were 2 (16.7%) respondents who put themselves in a neutral position. Figure 9 shows the percentage of response rate on the need of technical support.

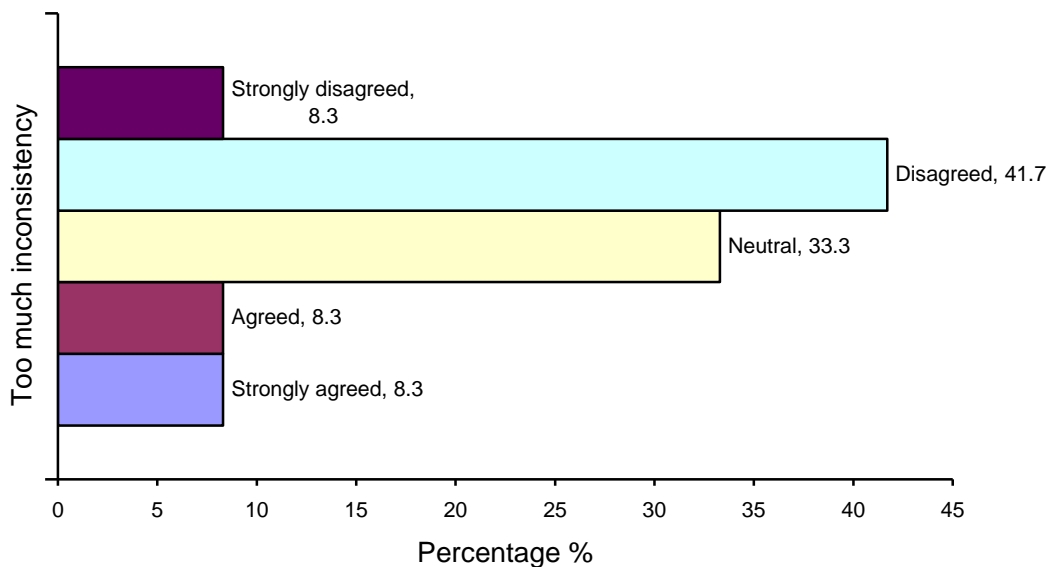
FIGURE 9: Percentage of response rate on the need of technical support



4.7 Too much inconsistency

Only 1 (8.3%) was agreed and 1 (8.3%) was strongly agreed with the issue of too much inconsistency of the product. In which, it indicates a positive result that the product has less inconsistency. However, 4 (33.3%) respondents have put themselves at the border line between agree and disagree. Another 5 (41.7%) were disagreed, and 1 (8.3%) was strongly disagreed because they thought that the product was indeed stable. Figure 10 shows the percentage of response rate on the inconsistency of the software.

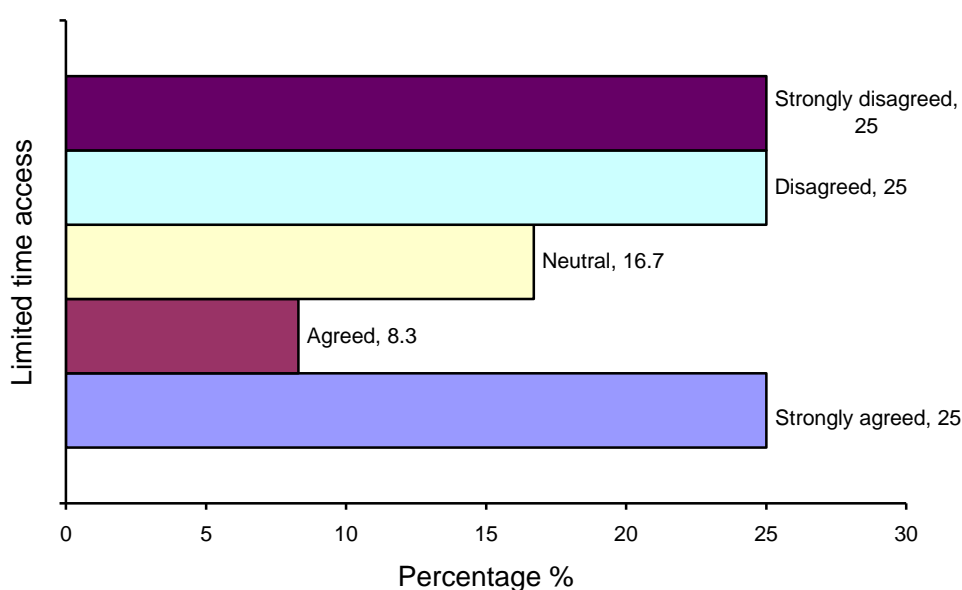
FIGURE 10: Percentage of response rate on the inconsistency of the software



4.8 Limited time access

More scores were at scale 1 to 2 compared to at 4 to 5, which reveals respondents' positive view on the product. In detail, 3 (25%) were disagreed and 3 (25%) were strongly disagreed on the issue of limited time access. While, only 1 (8.3%) was agreed and the other 3 (25%) were strongly agreed with the fact. Whereas, another 2 (16.7%) were in the neutral position. Definitely, there are some open software products that are free with limited time access and some with no limit but with limited functions (as in 4.5). Figure 11 shows the percentage of response rate on the limitation of access.

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



5. Open software vs. licensed software

Table 5 highlights some reasons/comments received from the respondents on the reason why they prefer to use the open software instead of licensed software. These reasons are split into two categories according to two library sectors; public and private sectors for comparison. Highlighted key terms that repetitively mentioned by the respondents from both public and private libraries such as 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. 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

<p><u>Public libraries</u></p> <p>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”</p> <p>R2: “It is easier to generate data and importantly it is paperless”</p> <p>R3: “Free and easy to use”</p> <p>R4: “It is free of charge and most of them no installation is needed, only use it through online”</p> <p>R5: “Can use different methods and tools in order to attract users’ attention during the class”</p> <p>R5: “Need to explore more about the software”</p> <p>R6: “It is free”</p>
<p><u>Private libraries</u></p> <p>R1: “Convenient to all, user friendly and free”</p> <p>R2: “Easy to get; no cost for basic function; many samples to emulate”</p> <p>R3: “To utilize the software or tools offered by the internet platform in their daily work and for personal matters such as studies”</p> <p>R4: “Of course it is free, easy to use and very simple. Portability, can be accessed anywhere anytime using any device”</p> <p>R5: “Mostly are free and they do a good job”</p>

DISCUSSION

Although there are some issues and challenges that people may face while dealing with the OSS, web-based and online tools ~ term used as the *open software* ~ it does not affect them to still find and employ these applications whether for personal or office use. Based on the major findings, all respondents (100%) would regularly use the open software for their information literacy programs where 11 of them (91.7%) considered it as easy to use, 9 respondents (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 ones. For instance, half of them (50%) were disagreed with the fact that these products have inconsistency in it 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 very feasible and practical for their daily use.

Librarians may employ any of the open software applications that relates to their routines. But, before they decided 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, etc. There are also developers who always sought to have their customers to upgrade the service from free to premium account. Definitely, the premium account needs certain costs to employ and more features added to it.

CONCLUSION AND RECOMMENDATION

There are some open software products that fulfilled the above criteria, more famous and are preferable among most of the respondents such as GoogleDrive, Prezi and SurveyMonkey. Thus, the study would give a good recommendation to the users out there that these three software applications are among the best open software used in information literacy programs. Like GoogleDrive, it has many packages inside one Drive. People may use its 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 no need of any technical supports from IT people. Applications like online form, online assessment, online survey, online collaboration, etc. can be done with these GoogleDrive packages.

In order to attract more users to attend library information literacy programs, one of the factors is to make sure that the slide presentation has a fascinate factor to make it more interesting and not dull. These days, many free software products that are easily traceable on the web for creating such an interesting presentation such as Prezi, LibreOffice-Impress and Dizzy. Among these three, Prezi received the highest response rate from the respondents from various institutions due to its easy features.

In addition, after an information literacy session, librarians may want to get immediate feedback from users who attended the session. Previously, printed assessment form was used and distributed to the users. Then, the completed form was collected, data was compiled and result was analysed and all was done manually. But now, people may opt for an alternative which is so easy, fast and efficient; that is by using free and open software available online. One of the examples of open software that are used for online assessment and online survey is SurveyMonkey; which received the highest positive rate from the respondents.

Another recommendation is, since libraries are very eager to adopt cost effective solution in general, and to be involved in open source developments in specific, 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 Assignment calculator continues to receive a positive feedback from the faculty members and students because of its benefited functionality. In the near future, they plan to create other educational tools for doctoral students using OSS.

REFERENCES

AlternativeTo website, available at <http://alternativeto.net/>.

Beal, V. (2015). *Freeware*. Webopedia, available at <http://www.webopedia.com/TERM/freeware.html>.

Berndt-Morris, E. and Chrenka, K. (2014). The plan behind the scan: using QR codes as a service and marketing tool. *Library Hi Tech News*, 31(10), 17-19.

Bolorizadeh, A. et al. (2012). Making instruction mobile. *The Reference Librarian*, 53, 373-383.

Breeding, M. (2008). Open source integrated library systems. *Library Technology Reports*, 44(8).

- Brunelle, M. (2002). Why free software matters for literacy educator. *Journal of Adolescent & Adult Literacy*, 45(6), 514-18.
- Corbly, James E. (2014). The free software alternative: freeware, open-source software, and libraries. *Information Technology & Libraries* , 33(3), 65-75.
- Forbes, C. (2014). Free web based tools for information literacy instruction. *Library Hi Tech News*, 31(10), 1-5.
- Froberg, P. (2015). *What is freemium?*. Freemium.org, available at <http://www.freemium.org/>.
- Khanse, A. (2015). *Difference between freeware, free software, open source, shareware, trialware, etc.* The Windows Club, available at <http://www.thewindowsclub.com/difference-freeware-free-software-open-source>.
- Magee, J. and Thomas, E. (2010). Customizing an open-source tool to enhance information literacy. *New Library world*, 111(11/12), 503 – 512.
- Massis, B. E. (2011). Information literacy instruction in the library: now more than ever. *New Library World*, 112 (5/6), 274-277.
- Payne, A. and Vandana Singh. (2010). Open source software use in libraries. *Library Review*, 59(9), 708-717.
- Reyes, V. (2006). The future role of the academic librarians in higher education. *Portal: Libraries and the Academy*, 6(3), 301-309.