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An Overview of Digital Library Implementation in Cambodian High Schools: A Case Study of a New Generation School (NGS) in Phnom Penh

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Abstract

The innovation of Education 4.0 has rapidly transformed the educational environment through the growth of technology including digital library management (DLM). However, most libraries in Cambodian high schools are not yet ready for this conversion. This study aimed to discover the digital library (DL) engagement in a New Generation High School (NGS) in Phnom Penh. It was carried out A case study mixed-methods design using structural equation modelling (SEM) observation and semi-structured interviews. The findings indicated that some digital platforms have been used in the library and performed various advantages such as enhancing connection and communication (Social media and Google Forms & Spreadsheet), improving accessibility (Library Management System (LMS) and Microsoft Office and Google Workspace), increasing efficiency and simplicity (Auto processes), data-driven decision making (Google Forms & Spreadsheet integration), cost-effectiveness (free & cloud-based solution; Google), and enhancing user experience (user-friendly interface like social media and LMS). The librarians also stressed that English literacy, information communication technology (ICT) literacy and operation budget are the concerns of applying digital libraries in high school. Larger sample sizes of both NGSs and general high schools are highly recommended for further research across the country.

1. INTRODUCTION

Library is the storage of knowledge in the form of various formats: texts, images, audio, and videos where both printed and online-based materials are categorized systematically in the type of classification: author, author role, printing places, publisher, shelf, bookcases, Dewey classification, genres, sections, book sources, etc. With the innovative-based education of Education 4.0: Cyber-Physical System, Internet of Things (IoT), and Smart Technology, digital libraries (DLs) in modern education have performed multiple functions to meet the learning requirements of the new learning culture. Sok & Heng (2023) stated that the necessity of technological frameworks is very important to modern classrooms with laboratory infrastructures for academic practicals and nicely organized libraries with printed documents and online content. The rapid growth of technological advancement has positively influenced most parts of our daily lives as well as the educational environment (Alenezi, 2023; Pangestuti et al., 2024; Rahmatullah et al., 2022).

Nowadays, the effects of the internet in society have swiftly transformed the ways of data accessibility from individual devices worldwide. With the integration of technology into library infrastructures, students can benefit from the new standards of learning possibilities by using QR codes, e-library, and virtual learning through online platforms from their computers and other devices (Henik, 2024). However, Joo & Lee (2011) stressed that some issues have still occurred since online-based libraries

have converted from the classical ones to library management systems (LMS) to master the effective functionalities for better services in terms of assessment. In particular, the performance of digital libraries for Cambodian high schools seems to be behind the global trend due to the lack of budget support and professionalism of library staff.

1.1. Research questions

To investigate a deep understanding of this situation, the author proposed a study which aims to discover the digital library performance in New Generation School of Prek Leap High School (NGS) mainly focused on:

1) What digital applications the library has currently used to manage its daily services?
2) How the effectiveness of its present operation accumulates to offer better services to the users.
3) What requirements for digital infrastructure and librarianship are needed in digital library implementation?
4) Providing best practices in adopting digital library usage in Cambodian schools.

2. LITERATURE REVIEW

A digital library (DL) is a web-based system that performs the roles of both classical collections: cataloguing, long-term archiving, and using online-based objects including text, images, audio, videos, and other online documents with automatic services for users to access remotely from their devices using the internet (Seadle & Greifeneder, 2007). Accessing large data of information sources from a distance through cloud computing, cloud servers, and various technologies makes physical library usage less concerning and less time-consuming (Cherukodan et al., 2013). Nowadays, information and communication technology (ICT) has significantly simplified the complicated works of traditional libraries in managing many tasks by collaborating with technologists and library staff to better understand potential digital library maintenance. This would provide adequate time, energy, manpower, and space (Hemlata, & Meena, 2013). Modern digital library systems can encode letters, numbers, and even link addresses into quick response codes to derive the uniform resource locations (URLs) by code readers when scanning the users' QR from their identification card (ID) which is generated by a software system or ads-on (Walsh, 2009). These operations bring a lot of advantages in digital library accessibility to either users or librarians.

On the other hand, technologies in digital libraries can precisely track users' playlists from their history. For example, Olusegun et al. (2023) commended that the characteristics of artificial intelligence technology (AI) in academic library services can be presented in chatbots, barcodes, Radio Frequency Identification (RFIDs), and learning machines that preserve the users' browsing history and subscribers' accesses into server's database. Furthermore, the review by Barsha & Munshi (2023) noticed that library services which have adopted AI generally provided remarkable results and enriched data accessibility, effectiveness, productivity, and better experiences to library users in developing countries. In addition, a study discovered that library services can also be improved by blockchain in multiple ways; library advancement, circulation utilities, exploration, information operation, and data repository to offer various services in the academic libraries (Emmanuel et al., 2023). The mass advantages of these digital libraries mentioned above benefit students' academic performance invaluable. In fact, some academic libraries in universities could also deliver extra skills training to deal with resource-retrieved, web-based seminars, and adopt digital competency improvements to students (Martzoukou, 2020).

However, there are some major challenges to the implication of digital libraries based on a study by Khalid et al., (2021); inadequate period of projects, absence of major in library and information science (LIS) at high educational institutions, library infrastructure and technological materials, large energy constraint, and working hours. For instance, opportunities to obtain all serviceable functionalities of digital library adoption can't be applied in many certain fields of library management in most developing countries because of various challenged settings; lack of budget support, ICT competency, and library structure issues. According to Emmanuel et al., (2023); Cox, (2021); Yuliani & Mercuriani,

(2021); Yusuf et al., (2022); Mohammed et al., (2022), negative results of insufficient academic library performance happened by the shortage of knowledge in technology, lack of professional personnel, state of resource-constraint, financial reinforcement, and the absence of electricity and internet bandwidth availability. Based on the study conducted by Bassey & Owushi (2023), "Cataloging and Classification" ranked in the top position in impact and challenges for library and information science in terms of artificial intelligence (AI) usage in the 21st century. For example, an AI-based implementation system for libraries can be the most challenging for librarians if they do not have enough infrastructure, skills, data privacy encryption, and cost expenses (Barsha & Munshi, 2023). According to the study by Wintana et al., (2021), both librarians and users would confront some problems in executing digital libraries virtually.

To identify the criterion of a standard digital library, the observation of structural equation modelling (SEM) which displays the settings of diverse areas such as i. ICT facilities equipped in the library, ii. ICT skills of librarians, iii. competency levels of librarians in using ICT tools, and iv. factors militating against librarians' ICT skill acquisition according to Eromesele et al., (2021). Owing to the revision and digital library evaluation items by Noh, 2016a; Noh, 2016b, there are some 13 evaluation elements and components as well as characteristics and the representative services of a digital library (see Table 2).

The early history of modern library in Cambodia has started in late 1924 under the name of National Library Cambodia (NLC) (Javis, 1995; Bywater, 1998). Since to past time until these days, there are more than 2,100 libraries in Cambodia including public libraries, school libraries, and academic libraries (Bywater, 1998). The great design of modern libraries would actively inspire and accelerate the outgrowth of knowledge in Cambodia. Additional extrinsic motivation to promote reading habits among Cambodian students requires participation from all stakeholders (Von, 2021). To achieve this mission, digital libraries play a crucial role in assisting students' learning environment, especially school libraries across the country. In 2019, the Ministry of Education, Youth, and Sport (MoEYS) has published "21st Century Library Standards" which guidelines of library accreditation assessment tool identified the main indicators of location and space, organization of space, staffing requirements for the library, librarian qualifications, the roles of a librarian in supporting a 21st century library, planning and dissemination, book collection related services, digital services, specialized programs to meet a school's goals and vision, professional development services for teachers, division of labour, hours of operation, user rules, monitoring book use and digital access, and financial budgets (MoEYS, 2019). Digitalization of current education trends is a part of modern libraries in digital services which allows students to access the internet, search engines, M-learning services, television screens, and educational software (MoEYS, 2022). These evaluation criteria are widely applied to Cambodian high school libraries of the New Generation School Program (NGS), a reform to build new improvements for government schools based on autonomy, accountability, and qualified standards for 21st century learning environment (MoEYS, 2016).

In supporting digital library implementation successfully for the 21st century library in Cambodia, physical and digital access must be covered in at least 4 main areas: i. Infrastructures: Refer to the use of innovative furniture designs to maximize access, operation of mobile devices, operation of research stations, student orientations about library access related to digital hardware such as computers and tablets and software such as online/offline applications, ii. Library management systems (LMS): This tool runs the process of managing book use and digital access such as using electronic devices for record-keeping, electronic inventory, tracking book counts, tracking book borrowing, tracking digital usage, iii. human resources which refer to librarian qualifications: The librarians must be as qualified as other teachers in academic staff at least 2 years of working experience and hold a bachelor's degree. The librarians must be capable of instructional roles, management roles, leadership and collaboration role, community engagement roles, and adherence to ethical standards, iv. user engagement: Physical (research space, reading area, instructional area, project work area, administration area, announcement

and information sharing) and virtual engagement (online communication and social media) promote ease of accessibility and simplicity for students and teachers. The combination of these fields provides the necessary requirements to perform best practices of digital library implementation in Cambodian high schools.

3. METHODS

3.1. Research design

The case study design of qualitative methods was introduced to this study where a descriptive questionnaire checklist for structural equation modelling (SEM) observation and semi-structured interview were employed to understand more about the library environment in digitalization.

3.2. Setting and participants

The 21st Century Library of New Generation School of Prek Leap (NGS) which is located in Phnom Penh was selected for the study where the librarians were the main characters for the data collection. Because the author was a teacher of English subject and worked as a librarian there, the interviewing was excluded himself. The only one was asked to answer the interview so that the bias could be avoided for the study. A sample clearly understood the purpose of the interview questions which guaranteed that the responses were enough confident.

3.3. Data collection

The data collection was divided into two phases, observation and interviewing. The first phase was the observation from the library guided by descriptive questions which were organized from a systematic review of previous research in English that was retrieved from Google Scholar, a search engine, and was regulated to centralize the extant digital library models (DLM). This stage was responded to by the author. The identification and characteristics of DL were developed into listing criteria as primary indicators. Then the checklist is constructed which consists of i) the number of digital tools ii) their functionalities iii) and ICT skills required were noted to be set into specific categories for each main theme. These spot-checks play as important foundations for the researcher to convert to desired semi-structured interview questions for the next phase of data collection. Additionally, a period of one week was spent carefully confirming what digital platforms exist in the library and are frequently used by the students and teachers when they reserve library services. After that, the interview tool for the second phase was separately designed into four main sections including i) demographic and proficiency in English language and ICT background knowledge, ii) digital applications that are presently used in the library environment, iii) benefits of the digital instruments that are being used, iv) challenges of using digital accessories, and v) what are the recommendations to apply best practice of full digitalization in the library. These main subjects were classified into paid applications and free versions basically relying on the online base. The responses from the interview were recorded and transcribed to modify and make hypotheses to finalize the study findings. This interview was replied to by another librarian in the absence of the author.

3.4. Data analysis

The analysis of quantitative data was conducted in a very simple way of agreement and disagreement remark in the list of digital tools used in the library. This process determined the presence of specific digital applications. Qualitative data in the second section of findings was analyzed using content-based. Graneheim & Lundman (2004) stated that the scaling and assessment of existence, meaning, and correlations of the speech, setting, or perception are settled in the content analysis methods to derive the meanings of texts, the writer(s), the audience, and even the present and past time of the study period.

4. FINDINGS

4.1. Results from the observations

The study revealed that the implementation of a digital library in the New Generation School of Prek Leap (NGS) is highlighted below:

Table 1. *Demographic information*

Librarian(s)	Sex	Experience	English Prof.	ICT skills	B/MLISc.
L1	F	15 years	No	No	No
L2	M	2 years	Excellent	Excellent	No

Table 1 shows that 2 librarians were working in the school library (1 female and 1 male). The female librarian without English proficiency and ICT skills was rich in experiences of 15 years while the less experience one was excellent in English language and information communication technology. Both of them hold no certificate of bachelor/master of library and information science (B/MLISc.).

Table 2. *Elements of digital library*

Name of elements and sub-functions	Remark
Acquisition	Agree
-Request materials online (Book/Space reserve)	
Collection (Online Collection)	Agree
-E-book/Image/Video/Audio/Open sources	
Classification & Cataloging	Agree
-List of information/Index system via NGS Mobile App.	
Circulation Service	Agree
-Circulation service using smart devices/Social media	
Reference Service	Agree
-Online book recommendation services	
-Digital outreach service	
-Virtual reference service	
User Service	Agree
-No. of users (Viewer counts)	
-Online materials (PDF/Book source links – external)	
-Provide supports (Frequently teachers' support)	
-User interaction services (Discussion button)	
-Book donation	
Library Program Service	Agree
-Online user education (e-library posters)	
-Provide webinar service (Sometimes of events)	
Space Service	Agree
-Indoor/outdoor physical space	
-Wi-Fi (Teachers/Library tablets)	
-Seminar room with large screen (Smart TV space)	
SNS Service	Agree
-Book search online	
-Library service by social media (Facebook/Telegram)	
-User guide/interaction online (Map location)	
Organization and Employees	Agree
-Decentralized authorities	
-Based on collaborative performance	
-User-centered	
Device Providing Service	Agree
-Laptop/Desktop/Tablet	
-Printer/Scanner	
Next Generation Service	Agree
-Cloud-based services	
-Library service by using QR Code/Barcode	

As listed in Table 2, the elements of the digital library were designed by Noh (2016), "Acquisition, book collection, classification & cataloguing, circulation service, reference service, user service, library program service, space service, SNS service, organization and employees, device providing service, and next-generation service." Most of these items have been actively implemented at the library of the New Generation School of Prek Leap (NGS) since 2023.

4.2.Results from the interview

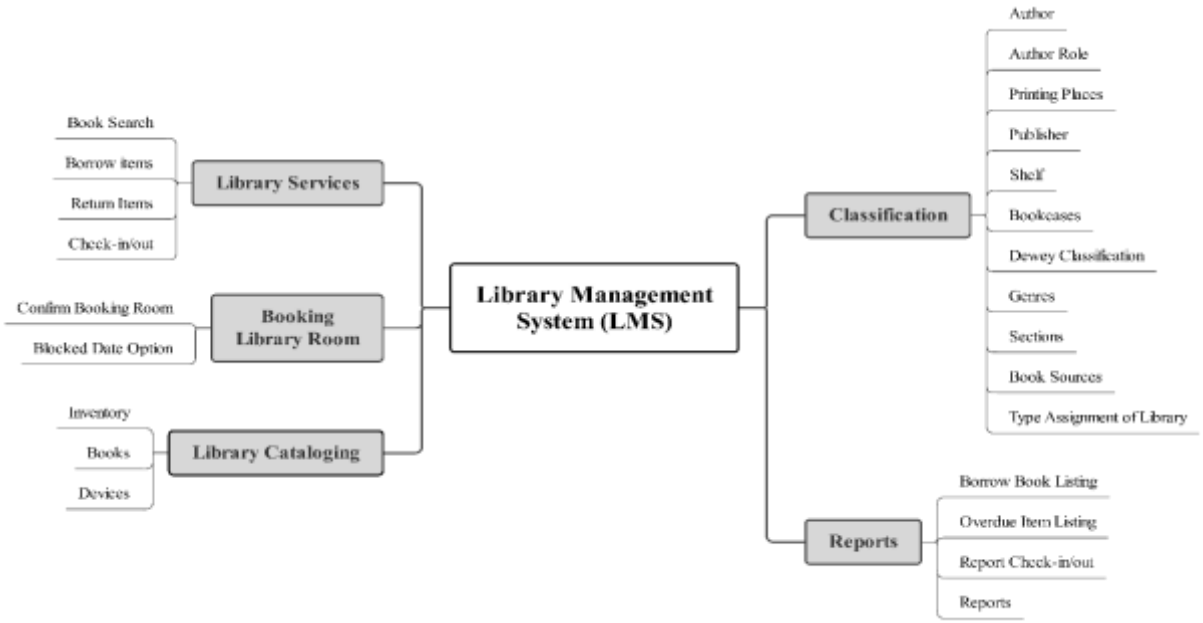
R1. What digital applications have the library currently used to manage its daily services?

"*In order to process the library management and perform our daily services for students and teachers, we have used different kinds of digital applications both online and offline such as Library Management System, Social Media, and Google and Microsoft Office Applications depending on the specific need for the services*".

The library is equipped with multiple digital platforms for its services nowadays such as:

i.Library Management System (LMS)

Table 3. *Library Management System at New Generation School of Prek Leap (NGS)*



The Library Management System (LMS) is customized software that is self-designed by school librarians from varieties of other LMSs and developed by a private company to fit the school's basic requirement which is unique to other LMSs. The application is a web-based LMS that manages physical objects in the library such as printed documents (books, magazines, portfolios, etc.), electronic devices (computers and tablets), and physical learning spaces (Smart TV and research area). This online-based tool works in multiple fields of i. library services, ii. library cataloguing, iii. booking library room, iv. classification, and v. report. What functions can work for library operation? Library Services Option: This appliance allows users to search books/documents by name or code number to get the specific location in the library. In addition, it handles the process of borrowing and lending books and tablets. Another option is the most frequently used one, student check-in/out because whenever the students come to the library they need to register their presence for library monthly reports. The second option is library cataloging which is responsible for books and device inventory when the list is added to the system. Third, the Booking Library Room Tab controls the library space confirmations (approve, reject, and block requests) if the teachers need to reserve library space for their session. The fourth option is Classification where masters insert the data of author, author role, printing places, publisher, shelf, bookcases, bookcase type, Dewey classification, genres, sections, book sources and type assignment of the library. The final option is Report Tap. It provides lists of reports for the library about borrowing book listing, overdue item listing, report check-in/out, and summary reports.

ii. Telegram Channel and Group

This platform is rich in many useful features to support communication and connection among librarians, teachers, and students effectively. Basically, the librarians post an announcement related to the library through the Telegram Channel which links to Telegram Group. The teachers and students can get direct messages from Telegram App on their smartphone or computer. There are also some comments to make about them in the Telegram Group, especially about the new issues and overdue items (if the students have not returned books to the library yet). This free online-based app stands in the main role for most institutions across the country, both government and private sectors.

iii. Facebook Page

Library Facebook Page has become a significant platform for librarians to deliver library information, enhance their library services, and outreach with the community. By consistently posting pictures or videos about the latest activities from the library to the page, this powerful tool creates valuable and interesting connections with outside environments.

iv. Google Forms

Google Form is a free product by Google which allows librarians to produce online filling forms for teachers and students to book library space reservations and return library service feedback. The booking form for teachers comprises with name of the lead teacher, sex, subject, date of reserve, shift, location, grade, and the purposes of library reservation. Teachers can access the form from their own devices (smartphone or computer). Additionally, library feedback on service, facilities and environment, information sources, and library staff is also created using Google Forms and generated in QR codes for the library users.

v. Google Spreadsheet

The librarians have posted Google Spreadsheet links to the other platforms as daily information about library conditions to inform the teachers and students about the availability of library spaces and services. The viewers can directly see up-to-date information from this web-based spreadsheet in real-time from their place without coming, calling, or contacting the librarians. By employing this application, everyone can spot the library statistics such as the number of lead teachers who came to the library, levels of grades, students, and other related graphs.

vi. Microsoft Office Excel

Monthly reports like timesheets and workplan and other reports related to number calculation are managed by Microsoft Office Excel which is a powerful offline spreadsheet software for the library in New Generation School of Prek Leap (NGS). Librarians also use this digital application for textbook reports, textbook borrow lists, and other administrative tasks.

vii. Microsoft Office Word with QR Generator Ads-on

Most documents are edited in Microsoft Office Word both in administration and learning. Librarians use this software every day. For example, 90% of the printed documents in the library have been done by this application.

R2. How the effectiveness of its present operation accumulates to offer better services to the users.

> "*... each digital application which has been used in our library provides best practice in its own ways. Some are good for online usage, and others are good for offline. But we use all of them every day – depending on the tasks we need to do. Generally, we use LMS for library services, and social media to communicate with teachers and students because all*

students have Telegram, School Telegram & Class Telegram, and we use Microsoft products for documentation."

Table 4. *Effectiveness of digital tools' functionalities by categories*

Functions	Digital Tools (online/offline)
Catalog Management	Library Management System (LMS)
Comprehensive Services	Library Management System (LMS)
Communication	Telegram Group & Telegram Channel
Data Collection	Google Form
Data Analysis & Reports	Google Spreadsheet & Microsoft Excel
Document Creation & Reports	Microsoft Word
Public Engagement	Facebook Page & Telegram Channel

The benefits of each tool differ from one to another. The services related to the books in the library are covered by LMS in separate options. Automation of LMS in cataloguing, overdue tracking, and item inventory are generated by systems which reduce occasional mistakes and manual work. The book searching option allows students to identify the book's location by just typing the information of the book (title and book ID) on their own smartphone (use library URL) if they need to know the exact bookshelf or bookcase in the library room. QR processing for students' attendance makes it easy for them to register their presence at library by scanning and clicking a button to choose the purpose to enter the library. The students can also borrow/return books and tablets using barcode without filling the form into manual books. This procedure saves much time and convenience. The system generates data and responses quickly at the time of request. Overdue notifications also alert in the admin system and student's Mobile App to inform them the date to return books to the library.

Figure 1: Barcode Tag sticked on book

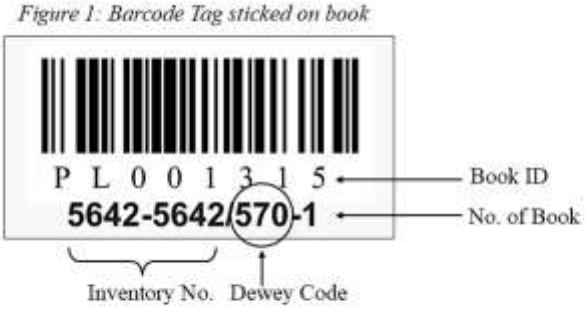
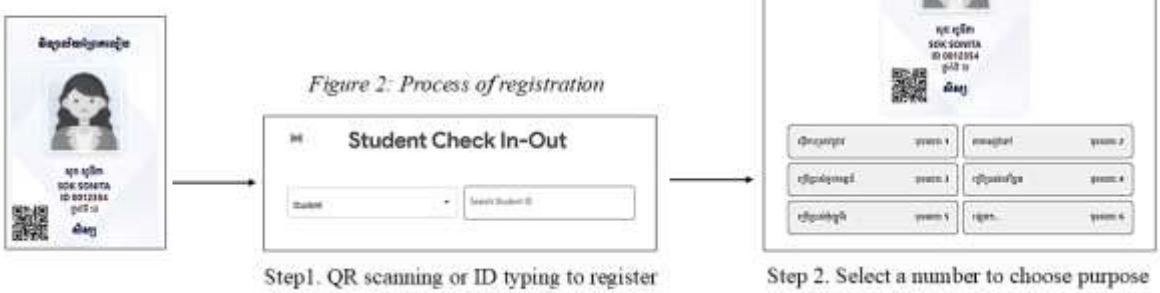


Figure 2: Process of registration



Scanning on QR to go to Google Forms for the library feedback gives the users quick comments with their confident comments rather than writing on paper to insert in the feedback box. Librarians can easily gather feedback with auto-generated data analysis in Google responses in pie charts and column charts. Moreover, Google Spreadsheet, which automatically collects and orders data from Google Forms, maintains detailed lists in real-time among library staff, teachers, and students. A teacher can check the information on library space's availability in the spreadsheet to see if the library is free during a specific period of teaching shift. On the other hand, the Telegram Group/Channel and Facebook Page

play as active tools in facilitating real-time updates and direct interaction to promote library services to its users. Librarians may text straight to student's inboxes if they do not return books on time. This private communication can keep their personal privacy instead of displaying their name in a list to the public. Lastly, professional documentation and office work in tables are designed in Microsoft Excel and Word. These provide offline and reliable personalization for the library's workflow. Everyone uses them. One computer has one Microsoft product at least.

R3. What requirements for digital infrastructure and librarianship are needed in digital library implementation at New Generation School of Prek Leap (NGS)?

> "*... we must fulfill the requirements at least three main things: Money, knowledge of English, and Computer skills. When we talk about digital, we know that we need money to pay for library management systems, computers, and other electronic materials. English proficiency at an average level at least and some ICT literary is also important one to operate applications. ... most of librarians are not specialized in librarianship – most documents, especially online documents and computer programs are written in English. Computer literacy is also a basic requirement to be a librarian because if we want our library services to perform well for the users, we adopt some technology in the services such as Google and computer skills. All these work with computer and English. In fact, our library management system is design in English language and if I do know something related to my work [as a librarian], I always watch YouTube videos and search on the internet in English. Additionally, social media that we use to advertise the announcement to students and teachers are in English, especially the technical terms and keywords that sometimes can be difficult to understand in Khmer...*"

The responses from the librarians' interview strongly stressed on operation budget, English language and computer literacy that make best practices in digital library implementation. If you are considering installing a library management system in your school's library, first you need to raise some funds to support the payment of the application. If the application is web-based DL, more payment on the domain name, cloud storage, and maintenance services must be included, which costs more than the offline one. Technological devices are also a set of budget constraints such as computers, internet supply, electricity, QR readers, displays, and other necessary items. English proficiency and ICT skills are also a part of the qualification in librarianship. Librarians should have at least basic knowledge of information science and other related ICT skills: digital resource management, technical skills, data analysis, cybersecurity awareness, content development, design, copyright specialist, partnership and feedback and mechanisms.

R4. What best practice can you provide in adopting digital library usage to Cambodian schools?

> "*What I can recommend for schools to think about digital libraries is the commitment of adopting digital applications. If we don't have enough budget to run, we need to consider other possible ways to do it such as using free version software and social media. To be an expert in these things, first, learn about the up-to-date technology trends and something related to Google products (free version) and Telegram/Facebook (social media) which can improve our school's services. After that, we must develop our professionalism and personal growth to align with rapidly up-to-date technology...*"

The best practice in adopting digital technologies into library services is defined by three main elements. The first one is the integration of free software and social media into the services as people nowadays are more engaged with social media. Employing these applications to the library can enhance users' experiences in today's world. There are also some free applications to use for library management

system, Koha and Google products, which are possible to adopt in limited access. It still works. Self-development to specialize in digital competency is a must to perform these tasks.

5. DISCUSSION

The study discovered some areas in digital library implementation in Cambodian high schools. According to the observation based on structural equation modelling (SEM), some basic elements of digital tools (See Table 2.) have been actively used by library staff to meet the necessity of library services which cover the acquisition, book collection, classification & cataloguing, circulation service, reference service, user service, library program service, space service, SNS service, organization and employees, device providing service, and next-generation service. Moreover, the interview also indicated that the wide range of free social media platforms as well as library management systems (LMS) and offline applications were administered effectively (See Tables 3 & 4). In this situation, the librarians could provide exceptional assistance and real-time engagement with library users.

Implementing these digital tools brings significant benefits to both libraries and users. Digital tools could effectively enhance the connection and communication among users through real-time updates on social media. For example, library events, new books released, or library announcements may be in the hands of the students on their smartphones which builds closer connections. Google Forms and spreadsheets also facilitate the data collection of library space reserves and quickly respond to others after the form submission. Additionally, technology would positively improve the accessibility of library workflow. The students may search for book location and availability from the browsers by typing the title of the book. This process can be done remotely at any time and any place with the internet. The librarians ensure that relevant documents can be retrieved easily from the internet and document sharing.

The use of the Library Management System (LMS) is increasing the efficiency and simplicity of its automated processes which administrative tasks of books/item borrowing and returning and inventory management could save time and avoid mistakes by librarian handwork. Moreover, the integration of Google Forms and Spreadsheet enables and makes it easy to collect data focusing on feedback from users. This handles information for librarians to allocate resources and improve library services to the students' needs. The responses from Google Forms display data of participants in numbers, chats, and graphs in visualized bright colours which help library administrators to get insights into their performance.

Cost-effectiveness is indeed an underrated factor to consider while adopting digital libraries. Free versions and cloud-based solutions of Google products and social media would reduce a lot of operational expenses related to traditional communication habits like printed information and announcements. Another advantage of digital tools is that Microsoft Office and Google Workspace facilitate the collaboration and flexibility of working environments among librarians and teachers in the school by allowing editing options to take control over Google spreadsheets and Google Docs simultaneously. This process supports document editing, managing, and other plans and reports. Last but not least, the users also get a better experience in the library's convenient services which promote engagement, user satisfaction, retention, and interest in using the library for their education support.

However, the school could not afford top-notch technology such as full options of advanced LMS, electronic library with high-tech bandwidth, and other AIs to use in the library because of inadequate financial supply, unqualified library staff in library and information science (LIS)

and other associated essential materials. Due to the issues revealed in this study, educating a qualified librarian staff for Cambodian high schools involved in the consideration by the Ministry of Education, Youth and Sport to offer bachelor's and master's degrees in major of Library and Information Science (LIS) in high education curriculum and provide librarianship pre-service training to teacher trainees who work in this field as other subjects in the public school. On the other hand, English and Information and Communication Technology (ICT) should also be strengthened to educate employees for better workflow in the library. Finally, building strong cooperation between the school library and local and international partners who work in the field of the library is highly recommended to fill some gaps we are facing nowadays for academic libraries in Cambodian high schools.

In this context, some recommendations for the next research about this study is that large sample size should be conducted including not only new generation schools (NGS) but also other normal schools which have limited operation budgets across the country. Moreover, library satisfaction from the library users in Cambodian high schools should also be carried out to seek best practices and points to improve.

6. CONCLUSION

The study results of the descriptive questionnaire checklist for structural equation modelling (SEM) observation and semi-structured interview questions have shown that the library in New Generation School of Prek Leap (NGS) has employed some digital platforms referred to as library management system (LMS) which is operated to manage only physical objects while social media like Facebook Page, Telegram Channel, and Telegram Group provide better connection with teachers and students in terms of simplicity and accessibility. Moreover, Google Forms, Spreadsheet, and Microsoft Offices are used for data collection and documentation which will positively enhance productivity for students' learning outcomes.

However, some challenges in digital library performance for Cambodian high schools are still of high concern because the librarians who can apply DL workflow must have good English language knowledge and the ability to use computer and information technology properly while most Cambodian public school librarians are in a limited boundary. One main task to consider is the school operation budget for digital library equipment, both LMS and other important hardware materials: computer, internet connection, technology devices, display, QR scanner, etc. to maintain the operation.

Based on this DL indications of digital library management, the continuous professional development (CPD) for teachers to be qualified in librarianship should be revised in the Ministry of Education, Youth and Sport's educational policy for teacher educational colleges and universities to promote their curriculum which includes bachelor and master program in Library and Information Science (B/MLISc) in Cambodian higher education. From that point of view, the study suggested that DL fulfilment should take place to promote digital education. The indicators to measure DL implementation should be able to integrate with new trends of the digital world and set goals to achieve by the school's action plans and librarians' professional development.

Declaration of conflicting interest

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Ethics statement

This study used written consent forms and followed the general ethical standards in social science research.

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