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## Final Program and Book of Abstracts

21 - 23 April, 2023

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Prague - Czech Republic  
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# Information Literacy Instructional Practices Among Academic Librarians Within the Asia and Asia-Pacific Region: A Comparative Analysis

Dayang Norsheila Abang Mohtar<sup>a</sup> and Fitri Suraya Mohamad<sup>b</sup>  
*Faculty of Cognitive Sciences and Human Development, Universiti Malaysia Sarawak,  
Kota Samarahan, Sarawak, Malaysia*

**Keywords:** Academic Librarian, Information Literacy, Higher Education, University, TPACK.

**Abstract:** This study examined the level of understanding needed by academic librarians working at university libraries in Asia and Asia-Pacific to produce practical teaching skills in Information Literacy (IL) courses. Data were analysed using Braun and Clarke's 2006 thematic analysis approach. Respondents were those teaching IL at five universities in Malaysia, one in Singapore, and one in New Zealand. Analysis indicated stark differences in how IL is taught in all participating universities. The findings helped identify the challenges faced by librarians as a result of the behavioural change brought about by 21st-century learners in higher education institutions which led respondents to question their teaching efficacy and how their work as informed instructors in delivering IL module content to students have informed the shifting roles of academic librarians in teaching IL.

## 1 INTRODUCTION

Pedagogical shifts across the globe have created a challenge for higher education institutions to produce competent graduates who are lifelong learners (Abeyrathne & Ekanayake, 2019). Students need to prepare themselves with lifelong learning skills (Kumar & Surendran, 2015), and academic librarians need to assist them in learning these abilities and promote the mentioned roles to recognise the Information Literacy (IL) professors' top-quality instructional practices.


Librarians must consider how appropriate and beyond conventional instructional methods affect students' learning engagement and outcomes when delivering IL skills teachings (Eke et al., 2010). This study explored whether academic librarians have sufficient knowledge and understanding about learning theories and commonly used Technological Pedagogical Content Knowledge (TPACK) framework to teach IL and prepare for 21st-century skills, active learning, and innovative pedagogical skills.


The TPACK framework defines the knowledge necessary for teachers to integrate technology into teaching and learning, consisting of Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK) (Mishra, 2019). TK is knowledge of conventional and sophisticated technologies, PK is knowledge of teaching and learning processes, and CK is knowledge of the subject matter to be taught (Mishra & Koehler, 2006). TPACK is later upgraded with the inclusion of Contextual Knowledge, teachers' knowledge of the context, ranging from the school, district, state or national policies they operate within (Mishra, 2019).

## 2 RELATED WORK

### 2.1 Roles of Academic Librarians in IL and Instruction

Academic librarians' roles have shifted from directing learners to the appropriate sources of information to facilitating them and ensuring they

<sup>a</sup>  <https://orcid.org/0000-0002-8287-5315>

<sup>b</sup>  <https://orcid.org/0000-0003-4460-8061>

actively participate in the process of identifying, finding, evaluating, applying, and acknowledging information. However, librarians are unprepared for this shifting role as informed educators (Montgomery, 2015). Wilson (1979) stated that although librarians are forced to educate, teaching is not part of their professional responsibility. Peele (1984) also argued that librarians must be well-versed in various fields to be effective agents of knowledge structure.

Academic librarians are responsible for teaching the IL skills required to discover, access, and utilise information (Fernandez-Ramos, 2019, as cited in Moin Ud Din et al., 2022) as they are essential for teaching university students bibliographic, research, and critical thinking skills (Hess, 2020) while ensuring that librarians' IL skills are parallel to users' technological needs (Moin Ud Din et al., 2022). Librarians should teach IL skills to ensure students are well-versed in them and implement learning theories to improve instruction and user interactions (Guder, 2010). Mashiyane et al. (2020) found that only a few librarians used technological tools in their IL instruction due to a lack of infrastructure and poor tool skills in South Africa. University librarians in Islamabad, Pakistan were confident in their IL skills, such as searching for information, locating sources, and using computer applications and Microsoft Office products.

Librarians used their best methods to teach students to become information-literate, but Montgomery (2015) and Elmborg (2012) expressed disappointment that librarians are not well-groomed to become informed educators. Librarians with close ties to academics are better equipped to use IL teaching techniques and incorporate new theoretical perspectives as pedagogy courses are not mandatory (Hodge, 2015).

## 2.2 21<sup>st</sup>-Century Learners and Learner-Centred Approach

21<sup>st</sup>-century learners are independent learners who should focus on gaining experiences and knowledge, striving to remain current, and learning as time passes (Das, 2021). However, they may need research confidence and IL skills which are essential for academic performance and life skills (Bond, 2016). Learner-centred learning is an essential concept for librarians, focusing on what students do to promote their learning rather than what instructors do. IL training can be problem-based, project-based, or inquiry-based (An & Mindrila, 2020), and requires more dynamic and appealing instructional

experiences (Aharony et al., 2019). The lack of time allotted to IL training impede the implementation of more effective teaching methods (Schachter, 2018).

## 2.3 Artificial Intelligence (AI) Emerging Tools

Academics and researchers increasingly use online library digital sources due to the transformation in information and communication networks. They offer practical values based on current technologies (Komosany & Alnwaimi, 2021) and emphasise the emergence of AI tools in academic libraries (Vijayakumar & Sheshadri, 2019). AI adoption by libraries has been part of library services, such as Chatbots and Text and Data Mining. Chatbots are able to imitate intelligent conversations and provide direct answers to predictable enquiries, offering 24-hour response availability and consistency. The chatbot tool offers a user-friendly experience for students (Vincze, 2017).

## 3 OBJECTIVES OF THE STUDY

The objectives of this case study are:

- 1) To investigate the current practices among academic librarians responsible for information literacy.
- 2) To identify academic librarians' knowledge about learning theories for better IL teaching practices.
- 3) To identify the theoretical knowledge of librarians about technological knowledge, pedagogical knowledge, and content knowledge when teaching IL
- 4) To investigate the awareness and preparation towards 21<sup>st</sup>-century skills, active learning, and innovative pedagogical skills.

## 4 RESEARCH DESIGN

This study used a qualitative method to distribute open-ended questions among academic librarians responsible for IL teaching and learning. Part 1 focused on typical IL practices among librarians, Part 2 emphasised on components of the TPACK framework, to determine how the teaching is conducted. The last three sections, i.e. 21<sup>st</sup>-Century Learning Skills, Innovative Pedagogical Skills, and Active Learning focused on level of awareness in

each aspect, followed by preparedness towards adapting these skills in teaching IL.

## 5 METHODS

The data for this study was obtained in 2019 and 2020. This study used a qualitative approach to collect data from academic librarians' responses to open-ended questions about teaching and learning, components of the TPACK framework, 21<sup>st</sup>-century learning skills, Active Learning and innovative pedagogical skills. These librarians are among those who teach IL skills at their respective universities. Lengthier replies were received for questions on teaching and learning while more direct questions like existing IL practices received shorter responses. Only 8 out of 34 respondents from 7 university libraries in Asia and the Asia-Pacific area volunteered to participate in this survey. Data were collected within six months and analysed using Quirkos. Inductive analysis was implemented as the data interpretation method and thematic analysis was conducted using Braun and Clarke's (2006) six-step guide. The themes identified in the inductive approach are firmly linked to the data retrieved (Patton, 1990 as cited in Braun & Clarke, 2006).

## 6 PARTICIPANTS/ SAMPLING CRITERIA

This study focused on librarians working at university libraries in Asia and Asia-Pacific, specifically those with experience in teaching IL. 8 participants were recruited from different universities in Malaysia, Singapore, and New Zealand, all of whom were familiar with Information Literacy courses. Purposive sampling was used to select participants according to the purpose of the research. This group helps us gain insight into several perspectives of IL-related matters experienced by librarians.

## 7 RESULTS

Six themes were identified throughout the thematic analysis of the open-ended survey, namely teaching skills, teaching skills awareness, teaching and learning impact, module design, teaching and learning preparation and teaching challenges. This section discusses how librarians engage themselves in IL-related responsibilities from various perspectives.

### 7.1 Teaching Skills

Malaysian universities have IL-teaching librarians, liaison librarians and librarians from specified units or branch libraries, while non-Malaysian participants have Education Services and Learning Innovation (ESLI) cluster and Subject Librarians to support teaching and learning. Participants used similar tactics in addressing students' inquiries during IL classes, with students encouraged to ask related questions to ensure they understand the lesson and are on the right path. Two participants preferred to take questions during and after class. One said that some questions require to be answered offline or to speak to students in person after class. It supports Thorn's (2022) best practice article, suggesting that librarians should research articles and ask questions to meet adult learners' needs, which informs the implementation of Active Learning in IL's teaching and learning sessions (Maybee et al., 2016).

Teaching IL tests librarians' confidence in using technology to teach, with some claiming to be competent and others seeing it as a learning experience. They stated, *"We're still learning and still trying to find the perfect set of tools. The Library has recently created a role of Digital Media Assistant which will aid the creation of these modules and have the required technical skills"*, and *"Not so confident. Because the librarians are not using them in daily basis"*. Responses illustrate the need to learn 21<sup>st</sup>-century skills and attend appropriate training or gain skills to provide better services (Eke et al., 2010).

Librarians are adopting their best teaching techniques without adequate training in educational theories or pedagogical practices. IL teaching experience allows participants to self-assess their teaching abilities, which are adequate and suit IL content delivery (Montgomery, 2015). Most participants reported that their teaching was influenced by students' class behaviour, creativity, level of education, student feedback, student group, librarians' teaching skills, and librarians' teaching experience. However, two participants responded differently, *"My teaching strategies are guided by what I am teaching, the time given and the student level and discipline (e.g. 1st years are very different compared to 3rd years; Humanities students are different from Engineering students). Generally, I take a hands-on approach. Give students an activity or an exercise to do first before giving them the principles behind it. Also, any explanation or lectures should not be more than 15min. If I have more time, I will prefer to guide my students to come up with the principles on their own"*, and *"We have a teaching*

*template that can be used to develop a session based on the learning outcomes. Any strategy will be based on those outcomes. We used to have a formal strategic library learning and teaching strategy, however, we now defer to the University one*". The response alludes to a need to improve the roles of librarians throughout their professional careers as lifelong learners for better teaching skills (American Library Association, 2022).

Findings also indicated that participants prepared for 21st-century skills by using technology, incorporating new knowledge, developing interactive modules, and holding online classes. However, two individuals responded that they were unsure, and one opted to apply flexibility to the mentioned skills. The responses implied the necessity for librarians to develop themselves to become lifelong learners and to be skilled in shaping students into lifelong learners. Malaysian participants prepared for this by creating learning activities and holding quizzes and Q&A sessions during IL classes. They also encouraged students to interrupt during learning sessions, increasing learner participation and holding forum discussions. One indicated that Active Learning is not an option at her workplace, while another remarked that librarians should consider it for learning evaluations. This study supports Korber and Shepherd's (2019) finding that IL training has yielded favourable outcomes since adopting Active Learning. According to Detlor et al. (2012), active IL instruction directly influences student learning outcomes, while passive IL instruction does not. However, some educators may find it challenging to accept Active Learning strategies, as may instructional librarians who believe it will result in time constraints (Korber & Shepherd, 2019). Detlor et al. (2012) also stated that Active Learning had been demonstrated to provide positive learning outcomes among students due to their participation during the learning process.

Being inventive in teaching IL can be challenging. One participant chose to create IL educational materials and teaching strategies. Two participants chose to include more technology in their classroom instruction. The remaining participants chose the Backward design method when teaching IL. The findings suggest that librarians should consider new techniques for teaching IL. However, it is argued in the literature that librarians should consider broader perspectives and align teaching and learning activities with institutional goals when redesigning IL education (Corrall & Jolly, 2020).

## 7.2 Teaching Skills Awareness

The study found that university requirements, librarians' ideas, top management instructions and tools, and the most recent trend all influenced participants' use of technology in teaching IL. However, Hanbidge et al. (2016) in their study on mobile technology usage for IL skills improvement and learning experience found that only 11% of participants used mobile devices to search for academic-related information.

Librarians should be aware of their students' learning preferences to meet their needs, and it was found that five participants met this criterion. However, one chose not to cater to it 100% by mentioning "*No, I don't think we meet all the learning styles of the students. If it is a one-shot ILP, it is not possible to meet all styles due to the limitation of time*". Another participant conducted surveys and sought feedback from course coordinators, tutors and subject librarians. This research has demonstrated the beneficial influence of IL skills on students' academic achievement. However, learning styles cannot help students gain a deeper understanding and retention of learning (Intan Azura Mokhtar et al., 2008).

For best content delivery methods, 4 participants opined that librarians should be up-to-date with the latest technologies in the Library Science field, be prepared to modify content delivery based on experience and feedback, and be open to having colleagues observe each other teach and learn. One argued that teaching should not be limited to one hour or less, and the other suggested knowledge of learning frameworks and objectives. Intan Azura Mokhtar et al. (2008), in their study, specified that IL instruction must be integrated with educational technology to ensure students and instructors benefit from their learning and also inform them as information literate. In self-evaluation, all participants had sufficient knowledge regarding this matter. There were also suggestions from librarians on the modules that need to be improved, such as "Citing and Referencing", "E-Resources", "Publication", "Mendeley", "Searching Techniques" and "Referencing". One participant stated that work-in-progress modules constantly change due to amendments, feedback, and requirements from librarians, students, and lecturers.

All study respondents expressed their initiatives to reconstruct their IL modules based on students' feedback, except for one Malaysian participant. The factors which drove such effort include students' level of understanding being challenging to pre-determine, and instances of information overload in one session, leading to difficulty in accepting the content being



taught. However, another respondent argued that their modules were based on what the librarians thought should be constructed at once. The content of IL modules is updated according to the needs of students and the university, and the syllabus can be changed at any time. Results showed that two participants conducted the realignment and syllabus improvements annually or whenever the need arose, while others kept to a routine in which their module was updated twice a year. The respondents also indicated that when new modules needed to be added to the existing ones and four agreed they would work on it immediately. Three participants opined that new modules could be added when needed, while only one participant found it unnecessary to add new modules. Respondents were generally satisfied with the content of their IL modules, except for one non-Malaysian participant. However, all agreed that the current content is relevant and meets the student's learning needs. Indian research indicated that librarians and teachers should organise and prepare an IL module based on course material and accessible resources as it will help users become more information literate and increase library utilisation (Vishala, 2017).

### 7.3 Teaching and Learning Impact

According to the Association of College and Research Libraries (ACRL), IL establishes the foundation of lifelong learning and helps learners to master information and extend their studies (Stellah et al., 2022). Students learning measurement is determined by the impact of IL classes conducted by each library. Three respondents measured student satisfaction through students' level of satisfaction, another two based on students' performance, and one from a class survey, better usage of resources, improved information searching and citation skills, and plagiarism awareness. IL classes improve students' learning experiences and serve as a tool for lifelong learning, with different learning activities such as quizzes, hands-on activities, assignments, exercises, worksheets, peer discussions, and informal assessments. However, two non-Malaysian participants argued that IL classes do not measure student learning outcomes and success.

### 7.4 Module Design

When creating an IL module, it is vital to understand how it is designed and developed to inform the type of content and how librarians go about it. Two Malaysian participants developed modules based on the Big 6 Model and SCONUL 7 Pillars. In contrast,

another Malaysian participant referred to the Australia and New Zealand Information Literacy Framework, Guideline on Information Literacy for Lifelong Learning (IFLA), and ACRL's Information Competency Standards for Higher Education. However, non-Malaysian participants argued that their IL modules are designed according to their needs and not based on any model or framework, depending on the library's goals for its students.

Moreover, findings revealed that Malaysian university libraries are structured by a variety of elements, such as previous practises, updated subscribed sources, discussion among librarians, input from librarians' readings, input from a seminar, best practices from others, students' feedback, instructions from mother campus, and IFLA standards. Students' information needs are a significant factor in the development of IL modules in Malaysian university libraries, with modules at another library being constructed using the IL framework from other libraries.

### 7.5 Teaching and Learning Preparation

Librarians should attend training for technology tools before teaching IL classes. According to the findings, six individuals attended the training, while two did not. Results showed that one participant prepared subject-related examples, two focused on database updates, teaching aids, and teaching venues, one prepared for presentation slide updates, facility checks, and Internet connection, and one checked and updated library module content and ensured that research tools were functioning well. Non-Malaysian participants focused more on time allocated for each IL session, class size, and lesson content, while another emphasised determining IL objectives with the course coordinator. The last two focused more on lesson plan preparation. Interestingly, a Canadian national survey found that librarians completed formal teaching courses to prepare for the teaching job and read and attend professional or research literature and workshops (Julien & Genuis, 2011).

Furthermore, results showed that librarians' strategies for IL lesson arrangements differed, except for one technique that two individuals shared: matching their lessons with library aims. One participant follows the instructional method besides evaluating students' information needs, collecting relevant materials, and providing research tools for the learning process, while another creates an outline of the session's content, establishes the calendar for lessons, and identifies class attendees. Non-

Malaysian participants spend more time designing and creating modules, revamping old modules, meeting with the course coordinator for discussion, and cooperating or co-presenting with one of the university's complementary central services. The remaining participants believe it is essential to focus on their lesson plan.

Librarians must develop 21st-century skills, Active Learning, and creative pedagogical abilities to teach effectively. Malaysian participants expressed different opinions on the importance of attending relevant courses, enhancing knowledge and skills, adhering to lifelong learning principles, reading more articles, joining a support group on social media, and associating with experts. The remaining participants stated that it is essential to incorporate media literacy in IL modules and apply critical thinking through questioning skills. However, findings of a study by Dixon-Thomas (2012) indicated that librarians and faculty must collaborate to expand IL instruction and assessment into the college curriculum and use 21st-century technological tools to better prepare college students for global communication, workforce, and lifelong learning.

The findings suggest that librarians must become familiar with Active Learning and ways to utilise it in teaching IL. One participant associates Active Learning with improved communication abilities, while another sees it as part of the trial-and-error process in the learning modules, while two believed that Active Learning might recognise different types of students. Besides a learning route within online modules, one non-Malaysian participant suggested that librarians should be mindful of Active Learning while constructing an evaluation or feedback for learning. The remaining participant has a different perspective, claiming that IL modules are not organised enough without this capability.

Active Learning may be related to pedagogical skills in teaching instruction. Librarians may or may not be familiar with innovative pedagogical skills because formal teaching is not required within the industry. However, each participant has expressed a distinct point of view on the subject. The findings revealed that each Malaysian participant had a unique point of view on the subject. It was found that librarians needed to be well-versed in pedagogy to establish or innovate ways of teaching and learning. Additionally, librarians must have expanded IT abilities to give interactive presentations and tutorials, and they should be encouraged to study books and articles on the subject to better grasp the expertise. Non-Malaysian participants, on the other hand, had differing perspectives on the subject, with librarians

keeping pedagogy in mind and that the learning designer (subject librarian) can specify the type of approach to be taken in designing their teaching strategy, and are being encouraged to attend workshops hosted by the Centre for Development of Teaching and Learning to stay current on innovative pedagogical skills.

Technology facilitates the transmission of material and tools to teach students IL skills. The findings revealed that all participants used technology tools to teach IL courses. One participant used EndNote for citation, the library website to search for e-resources, and PowerPoint presentations for instruction. One uses EndNote for a similar purpose and additional unmentioned tools are utilised based on the appropriate IL module. Another participant used PCs or laptops for hands-on training, PowToon and PowerPoint slides for library briefing, SlideShare or videos for lesson notes, and Kahoot to complete projects linked to any single IL module. The other uses online databases to look for resources, such as online journals, and e-books, in addition to Mendeley for citations and references and Turnitin for conducting similarity checks. Two participants also mentioned using other technologies like YouTube, Google Forms, Kahoot, and Moodle. YouTube serves as a venue for students to post video assignments, Google Forms is utilised for feedback, Kahoot is used for pertinent IL activities, and Moodle acts as a learning platform. One of the remaining participants employs various technologies in the IL learning sessions, including Learning Management System (LMS), Kahoot, H5P, Adobe Captivate, PowToon, Video Scribe, and PowerPoint. The LMS acts as a platform for disseminating learning resources or engaging students in their learning activities, whilst the other technologies work to engage students, in learning activities to increase learning or to support flipped classes. The final participant had a distinct set of tools, such as PowerPoint, Adobe Creative Cloud, Camtasia, Audacity, Panopto, Quizlet, and Qualtrics. These tools were used to create storyboards, videos, and audio recording, and administer quizzes. Participants were asked if additional technical tools may be appropriate for IL modules. The findings suggest that Massive Online Open Courses (MOOCs), Smart Sparrow, and Adobe Captivate are appropriate for IL programmes. Local participants also suggested grammar checker tools and statistical tools for study and data analysis and one of the non-local participants mentioned that Smart Sparrow and Adobe Captivate are suitable for IL courses. However, one local and one non-local participant did

not believe that any potential tool could be used in any IL module.

## 7.6 Teaching Challenges

Findings revealed that technology tools are the most critical factor contributing to IL teaching issues, and Malaysian librarians have opinions on the need to expand their expertise and comprehension of technology tools. However, one participant is undecided and another stated that such knowledge and expertise are unnecessary for librarians. Results also revealed challenges librarians face, which include difficulty dealing with students of varying levels of competency, incompatibility with research tools, difficulty accepting the tools, and passive students who cannot cope with online learning. Non-local participants reported that they do not teach students to use technological tools besides encountering audio and video problems.

Libraries should retain professional librarians to develop and share information to meet students' demands. Continuous Professional Development (CPD) is essential for information professionals in academic libraries to retain current skill levels to cope with emerging ICTs (Abdelrahman, 2009).

## 8 CONCLUSION

This study revealed a glimpse of how knowledge and practice gaps exist among librarians and their teaching methods in the Asia and Asia-Pacific environments. However, there was a limitation in the number of participants who agreed. Future work will include more participants being recruited to build on the findings. It is also recommended to add time for IL classes, so librarians to become more up-to-date with technological tools, receive adequate training on the tools, be introduced and familiarised with pedagogy, and have the ability to transform theory into practice.

With the emerging advancements in AI in education, academic librarians must use AI to help students understand strategies to use information and create a meaningful learning experience. The study presented how librarians have individual ways of applying knowledge to help students become information-literate, and their current challenge is to improve their knowledge and skills further to ensure the effectiveness of their IL classes.

## ACKNOWLEDGEMENTS

The authors wish to thank Universiti Malaysia Sarawak – Research, Innovation and Enterprise Centre and Centre for Graduate Studies, for their invaluable support to enable the conduct of this study.

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