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Exploring a Collaborative Model: Engaging Library Resources through Study Trips and Technology

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Abstract:

This paper presents a joint initiative, active since 2024, between the HKSKH Ming Hua Theological College Library and the Rissho University Library titled “From Scrolls to Gadgets: Collaborative Library Initiatives for Refreshing Learning Experiences.” Grounded in cultural heritage informatics, the project integrates cultural heritage (paper and bookmaking- washi, movable-type printing, and stitched bookbinding), information skills (AI and digital literacy), emerging technologies, and study/field trips.

The team consists of librarians from Ming Hua and Rissho, together with student library assistants from both libraries. Team members come from diverse academic backgrounds, including computer science, economics, education, engineering, history, library science, and sociology. This paper demonstrates how the team uses international partnerships and technology to engage library resources (such as special collections and technology equipment) to achieve the following aims: (1) to address gaps in cultural heritage informatics within library user education in the Asia-Pacific region through leisure-based experiential learning, study/field trips and virtual learning experiences; (2) to facilitate the use of technology tools in the libraries such as AI tools, makerspace, 3D printers and laser cutters; and (3) to promote and facilitate the use of library rare books and special collections as learning and research materials.

Keywords: cultural heritage informatics, AI, digital literacy, library user education, collaboration

Background

About the two libraries: Both libraries have long histories rooted in religious backgrounds. They also share common interests in the promotion and preservation of special collections, library user education through leisure learning and technology tools, and practical internship training for student library assistants. In addition, study trips and field trips are common learning methods embedded in the degree programmes of each institution. As this project is more aligned with leisure learning, the term study trip is used in this project.

HKSKH Ming Hua Theological College (Ming Hua) offers degree programmes in theology and the humanities, as well as joint programmes with institutions in Japan, Australia, and the United States. Ming Hua is a tertiary college that belongs to the Hong Kong Sheng Kung Hui (HKSKH), also known as the Hong Kong Anglican Church, which has provided social services and education for over 180 years. To date, HKSKH operates more than 100 schools, including kindergartens, primary schools, and secondary schools, in Hong Kong and Macau.

Rissho University (Rissho) traces its origins to 1580, when it was founded as a school for priests of the Nichiren Sect of Buddhism. The modern university was established in 1872 and is now operated by Rissho Daigaku Gakuen. Today, Rissho University comprises nine undergraduate faculties and seven graduate schools, offering programmes across the humanities, social sciences, and natural

sciences. The university maintains international partnerships, including collaboration between Ming Hua Theological College and Rissho University.

Reasons for selecting a cultural heritage topic for the project: considering the academic backgrounds of Ming Hua and Rissho, as well as the special significance of the history of books in libraries, this project focuses on cultural heritage topics related to paper and bookmaking. The topics addressed include washi paper, movable-type printing, and traditional stitched bookbinding, which also played important roles in the spread of religion in ancient times.

Washi paper, known for its durability and suitability for writing, has been widely used in historical documents and preservation practices. Traditional stitched bookbinding encompasses a wide range of subjects, including religion, literature, history, and philosophy. The invention of movable-type printing further advanced the accessibility of books and the dissemination of knowledge; for example, the early Chinese Bible was printed using movable-type.

Facilitating Library Collections Through Technology and Experiential Learning: In general, rare books and special collections are usually kept in closed stacks, while access to these materials is provided through digitization, exhibitions, and user education. Currently, emerging technology tools are becoming more affordable and easier to use, and libraries increasingly have access to equipment such as makerspaces. In addition, with recent breakthroughs in artificial intelligence, many AI applications are now available, including generative AI, Large Language Models (LLMs), and AI agents.

Hence, in this project, Ming Hua Library and Rissho University are exploring a model for enhancing the use of rare books and special collections through technology, leisure-based experiential learning and study trips.

Design and Framework: In this initiative, Ming Hua Library and the Rissho Library combine our respective strengths and professional expertise. The Rare Book Library of Rissho University is well known for the promotion and preservation of rare books and special collections. For example, the library offers workshops that allow users to learn traditional stitched bookbinding and to handle collections made of washi paper or printed using movable-type printing.

Meanwhile, Ming Hua Library has developed several technology-based library user education projects, including the development of digital literacy among university and school students through VR and drones in 2019; Connect the World via Libraries, an online programmes conducted from 2020 to 2022; and mini-AI

games introduced since 2022. In addition to the partnership between Ming Hua and Rissho, as washi paper production and movable-type printing involve specialized skills, the project is also supported by experts from related industries.

Besides technology and international partnerships, another core component of the project is the development of library user education involving student library assistants. The student assistants, together with librarians from the two libraries, have worked as a team to create gadgets and learning materials for general and potential library users. Through the library user education, participating students can gain knowledge in cultural heritage, AI, digital literacy, and international experience.

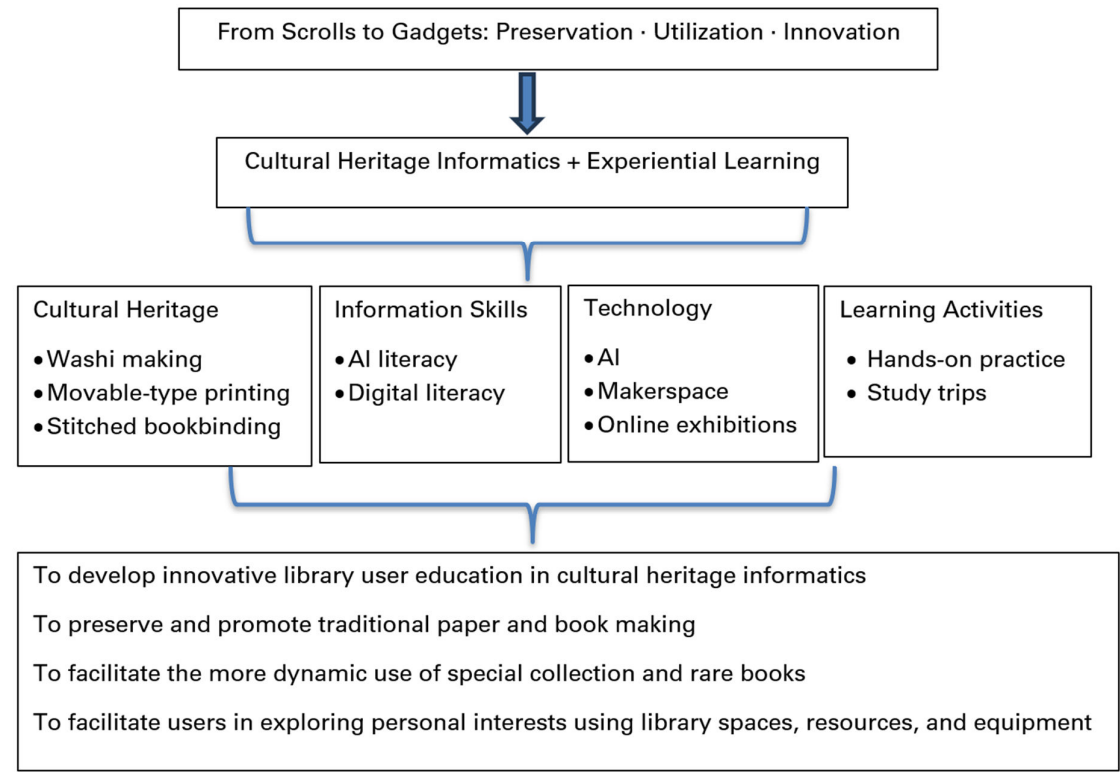


Figure 1. Framework of the project

Project Concept: From Scrolls to Gadgets — Preservation, engagement, innovation. The project integrates cultural heritage, library special collections, emerging technologies, and study trips to create innovative learning experiences.

Scrolls symbolize the use and promotion of library collections such as special and rare books, as well as the traditional knowledge embedded in these collections, including washi paper making, movable-type printing, and stitched bookbinding.

Gadgets refer to the development of technology-enhanced learning materials and information technology tools that translate cultural heritage knowledge into interactive and accessible formats.

The project is guided by three core concepts:

- Preservation - emphasizes the transmission of cultural heritage, traditional knowledge, and craftsmanship across generations through the participation of librarians, cultural heritage experts, and younger generations, such as student library assistants.
- Engagement - highlights the active use of library resources and collections through hands-on learning, experiential activities, and student participation.
- Innovation - reflects the creative application of technology and new pedagogical approaches in library user education.

Cultural Heritage Informatics (CHI) is an interdisciplinary field that integrates cultural heritage studies, information science, and technology (Bastian & Harvey, 2014; Turner et al., 2024). This project is grounded in cultural heritage informatics and focuses on integrating cultural heritage content, AI, digital literacy, and emerging technologies into library user education.

Technology plays a key role in this initiative. The following sections demonstrate how the Ming Hua and Rissho teams engaged with library resources, special collections, and technological tools—such as AI applications, 3D printers, laser cutters, and online platforms—to develop technology-based learning gadgets.

The project prioritized easy-to-use, low-cost, and no-code or low-code tools. Content for the gadgets was developed using data and information collected during two cultural heritage study trips to Japan.

Timeline for the development of technology-based gadgets and learning activities

June–December 2024: Preparation and Exploration: This phase focused on project preparation and feasibility assessment. Librarians from both institutions conducted literature reviews, clarified project objectives, assessed available

technological tools and resources, and considered the academic backgrounds of the student library assistants.

During this period, Rissho librarians also visited Ming Hua Library and several libraries in Hong Kong and Macau to gain a deeper understanding of local library resources, equipment, and user education practices. At the same time, Ming Hua librarians learned Japanese stitched bookbinding techniques through training provided by Rissho librarians.

Based on these preparatory activities, the project team decided to develop mini-AI games related to these cultural heritage items. Also, 3D printers and laser cutters were used to create three-dimensional movable-type tools. In addition, student library assistants were involved as part of a cultural heritage-focused library user education programmes.

January–June 2025: Development and Implementation (pilot study): Building on the preparatory work described above, the pilot study focused on collecting the data and information needed for the development of mini-AI games and 3D learning materials. Librarians from Ming Hua and Rissho participated in a study trip in Japan to Ogawa Town to explore traditional washi paper making and to Tokyo to study movable-type printing. The objectives of the trip were to engage with experts, gain first-hand experience of these cultural heritage practices, and collect visual and textual data through photography and video recording. The photos and video recordings were subsequently shared with the student assistants to facilitate idea development.

For traditional stitched bookbinding, librarians from the Rissho Rare Books Library conducted hands-on workshops and produced step-by-step instructional videos. Through these activities, team members, including student library assistants from both institutions, gained practical knowledge of bookbinding techniques and rare book collections.

In the pilot study, librarians and student library assistants collaboratively developed a series of learning gadgets, including:

- Mini-AI games: Two mini-AI games were developed using mBlock—one focusing on washi paper and the other on movable-type printing.
- Physical learning objects: Three-dimensional movable-type tools and bookmarks were created using 3D printers and laser cutters.

The outcomes of the pilot study will be published in the Journal of the Australian Library and Information Association (Cheung et al., in press).

June 2025 – February 2026: Expansion and Enhancement: The outcomes of the pilot study for participating students were positive, as the learning activities facilitated the development of their skills in AI, digital literacy, cultural heritage, and international learning. The results also indicated significant potential for expanding the content of the gadgets and incorporating additional cultural heritage themes. Therefore, librarians from Risscho and Ming Hua, with support from Ogawa Town, organized a study trip in November 2025 as a follow-up initiative.

The November 2025 study trip expanded the scope of cultural heritage topics. During this study trip, the Ming Hua and Risscho teams collected a second round of data, which was used to develop additional learning gadgets using emerging technologies. Key activities included:

- Revisiting sites related to washi paper making, movable-type printing, and stitched bookbinding to collect more detailed data.
- Expanding cultural heritage coverage to include historical sites such as the Yoshida Family Residence, a designated Important Cultural Property, as well as traditional musical instruments such as the Taishō-goto and traditional foods.

Additional initiative for other librarians and archivists: This study trip was also open to a small group of librarians from various types of libraries and archivists from Hong Kong. Their role was solely that of learners, enabling them to gain hands-on experience in cultural heritage and to access special collections at the Risscho University Library. In addition, the student library assistants involved in the project participated in the trip.

Development of Learning Materials with Technology: Data collected during two study trips (May and November 2025) enabled the Ming Hua and Risscho teams to develop more comprehensive content, design additional tools, and further explore immersive learning approaches. Based on the unique characteristics of the cultural heritage items, the team employed a range of technologies, such as AI tools, 3D printers, and laser cutters available in the makerspace, as well as online platforms, to develop a series of innovative gadgets and learning materials.

AI Tools	Makerspace	Virtual exhibitions
● Mini-AI games (mBlock)	● 3D printer	● Spatial

● LLMs (Large Language Models) ● Ollama, Docker, Open WebUI ● n8n	● Laser cutter ● Mini-drones	● Omeka ● Videos
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Figure 2. The technology tools utilized in the project

The following are the gadgets and learning materials developed by the Ming Hua and Risscho teams.

Mini-AI games (using mBlock): After the November 2025 study trip, the movable-type games and washi games have been enhanced with more detailed content, including additional information about the cultural heritage items and recommendations for related cultural heritage activities, and an additional mini-AI game focusing on preservation.

Movable-type AI Games. These contain a set of four mini-AI games, including Q&A about library collections and services; a game for learning the procedures of movable-type printing; activity recommendations based on players' facial expressions and emotion analysis; and AI-assisted learning in four spoken languages—Cantonese, English, Japanese, and Putonghua.

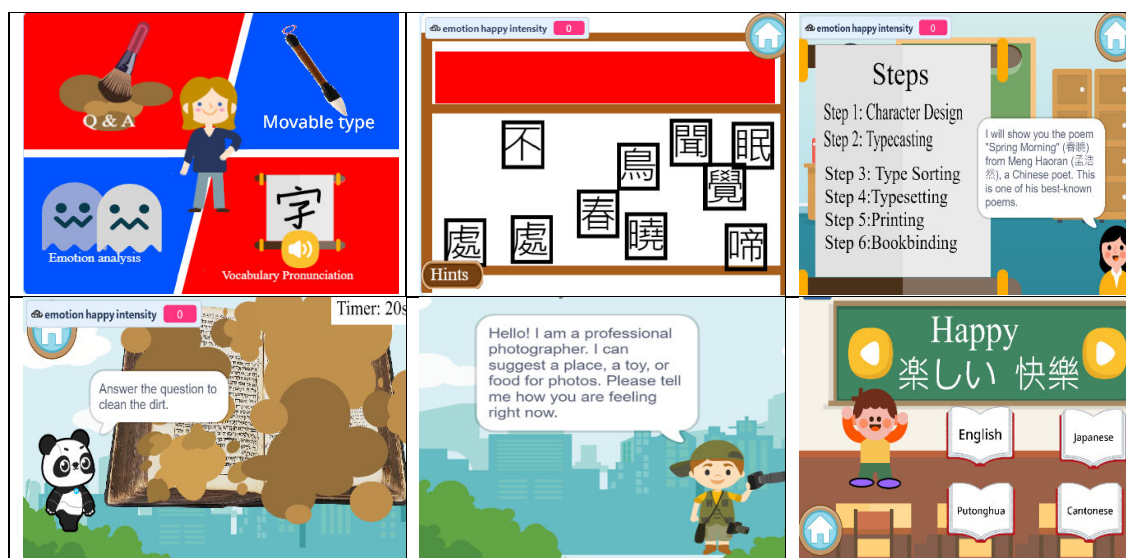


Figure 3. Movable-type mini-AI games

Demo: <https://library.minghua.edu.hk/video20260306>

The Washi AI Games also contain a set of four mini-AI games, including a game for learning the procedures of washi papermaking; book and activity recommendations based on players' facial expressions. Users can also use the

arrow keys on the keyboard to control the virtual mini-drones, which correspond to the real ones that can be operated in the Rissho Library.

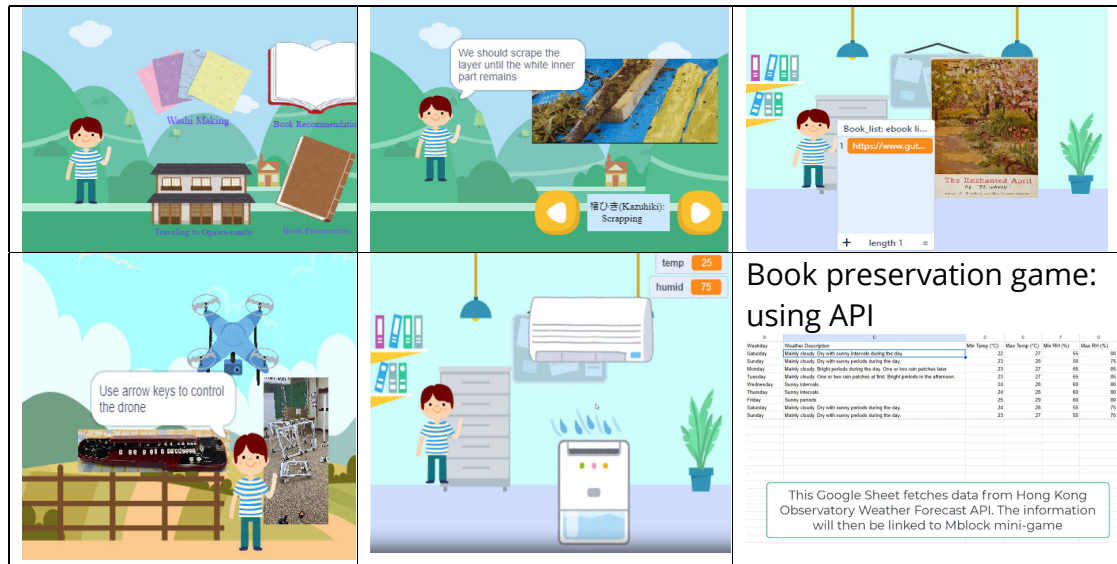


Figure 4. Washi mini-AI games

Demo: <https://library.minghua.edu.hk/video20260302/>

Another new game is a book preservation game that uses an API. API stands for Application Programming Interface, which allows users to access data from other computer programs. The Google Sheet fetches data from the Hong Kong Observatory Weather Forecast API. The information is then linked to the mBlock mini-AI game.

A Local Personal AI Large Language Model (LLM) Assistant was built using Open WebUI, Ollama, and Docker. Using documents, images, and other data collected during the cultural heritage study trips, the team created a localized and personalized AI research assistant. For example, users can interact with this local AI LLM assistant for chatbot functions, report summarization and drafting, and image analysis related to study trips, instead of connecting to an online AI assistant. This ensures that personal data is saved only on the personal computer, which helps protect data privacy and enhance data security.

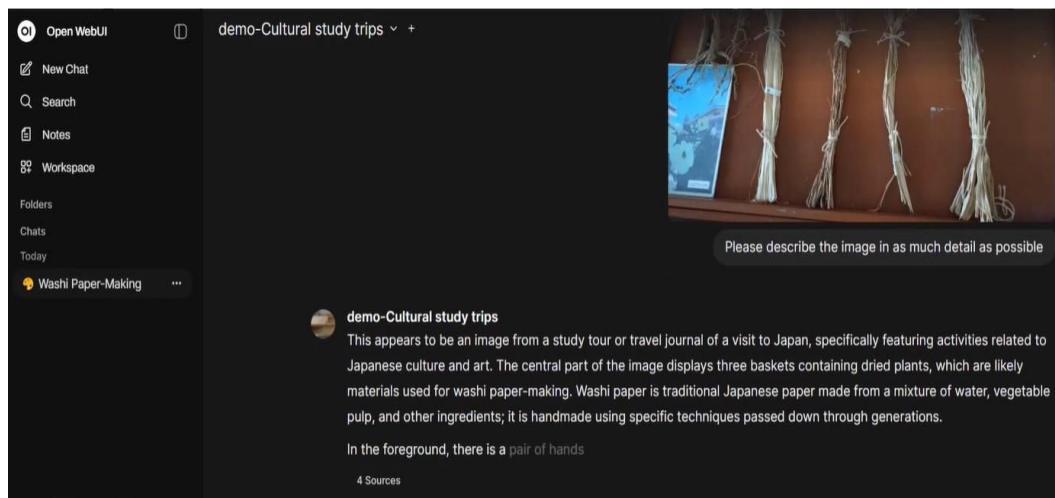


Figure 5. We built a local AI LLM assistant using Open WebUI, Ollama, & Docker
 Demo: <https://library.minghua.edu.hk/video20260304/>

In addition, through the deployment of a local AI LLM assistant, students can gain hands-on experience and learn the concepts involved in creating a custom AI assistant. This includes how to install Ollama, Open WebUI, and Docker; select and pull models from Ollama; add knowledge bases; practice prompt engineering; and create tools using Python to enhance models in Open WebUI.

n8n: To further demonstrate and visualize how AI works, the team has deployed an additional local AI agent using n8n, a platform for building AI automation workflows. In this example, students can practice AI workflow development, model selection, API key management, vector database development, RAG (Retrieval-Augmented Generation) implementation, prompt design, and the evaluation of AI-generated results.

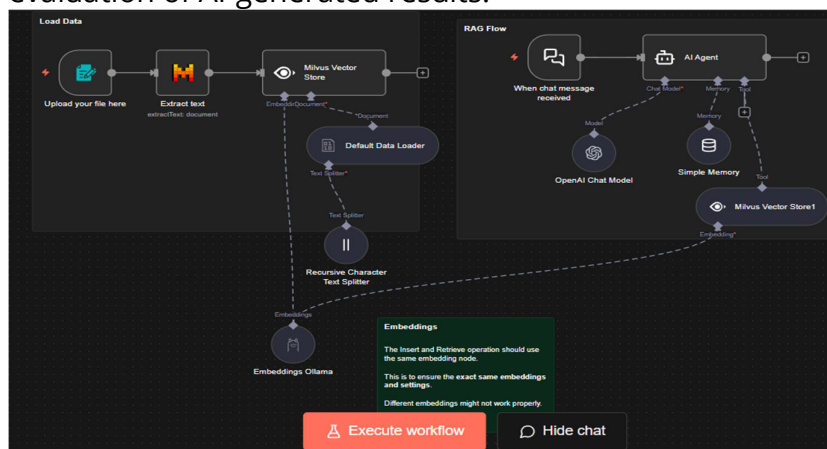


Figure 6. We developed a local AI agent using n8n
 Demo (with a vector database): <https://library.minghua.edu.hk/video20260301/>

Demo (with API & email sending): <https://library.minghua.edu.hk/video20260422/>

With the use of a vector database and RAG, documents from the cultural heritage study trip are split into chunks, converted into vectors using an embedding AI model, and then stored in the database. The AI agent can then answer questions based on the vector database loaded with information from the cultural heritage study trip, such as summarizing the trip or retrieving event details. This enhances accuracy and reduces AI hallucinations.

Virtual Experiences: In addition to developing AI learning tools, we have also created virtual experiences to extend the physical study trips to library users who may not be able to visit the sites in person. The Ming Hua and Rissho teams used study trip themes, along with images and videos collected during the trips, to create immersive experiences on the Spatial online platform as well as online exhibitions and databases using Omeka.

Spatial is a web-based metaverse platform that allows teams and communities to meet in immersive 3D spaces. Its purpose is to enable collaboration, events, and creativity through customizable virtual rooms, avatars, voice chat, and shared content. Spatial supports various types of media, such as photos, videos, 3D objects, and more.

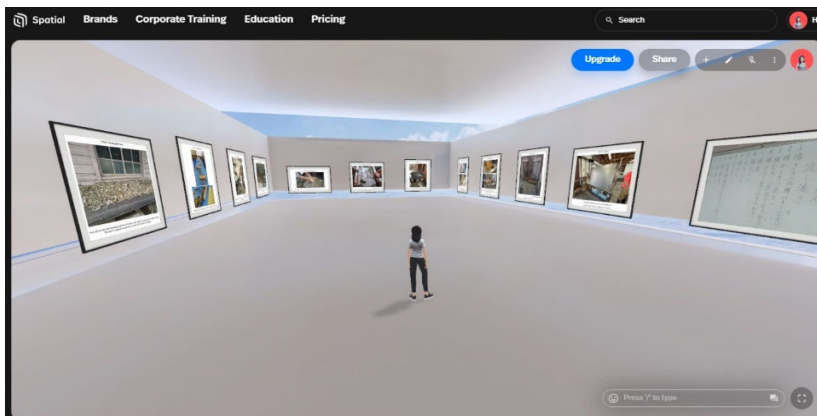


Figure 7. Creating an online exhibition using Spatial
Demo: <https://library.minghua.edu.hk/video20260303/>

In this project, the teams used Spatial to create virtual study trip experiences covering the content in the physical study trip, such as the Rissho Rare Books Library's special collections, washi papermaking, stitched bookbinding, movable-type printing, traditional musical instruments and historic buildings. For example, students from both libraries worked with librarians to create a step-by-step

stitched bookbinding video with subtitles in Japanese, English, and Chinese. In addition, other short videos and photographs with descriptive information were uploaded to the virtual exhibitions to showcase washi papermaking, Taishō-goto performances, historic buildings, and traditional foods.

Online visitors can explore the study trips via Spatial individually or as a group. They can access Spatial through web browsers or mobile devices, and even with VR headsets. Visitors who use VR headsets can experience an enhanced level of immersion.

Omeka: By creating online exhibitions and databases using Omeka, students have developed practical skills in digital collection development, materials cataloguing, Dublin Core metadata application, digital image organization, descriptive writing, and online exhibition curation.

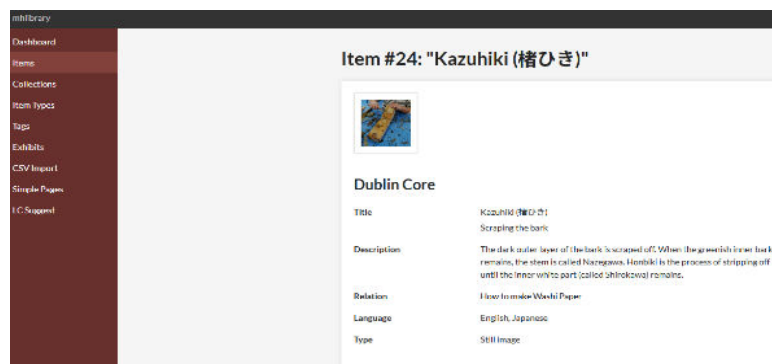


Figure 8. Creating online exhibitions and databases using Omeka
Demo: <https://library.minghua.edu.hk/video20260305/>

Participating students also indicated that the use of online platforms such as Spatial and Omeka can facilitate further collaboration between librarians and students worldwide and help overcome the limitations of physical distance between libraries.

Makerspace: 3D printers, laser cutters and mini-drones

Some of the technology tools available in the makerspace at Rissho University Library were used for the project to create 3D movable-type tools, to produce souvenirs such as name stamps and bookmarks, and to integrate mini-drones into a game embedded in the library tours.

Use of a laser cutter and 3D printer to create library souvenirs



Mini-drone fun at Rissho



Outcomes of the Project to Date

The outcomes are extensive, facilitating innovative library experiences that extend beyond traditional boundaries. The project integrates humanities subjects, cultural heritage informatics, experiential learning, and library resources into library user education. The project advances the following key areas:

Provision of diverse and enriching learning experiences: Through the application of a wide range of technological tools, the project has supported the preservation and promotion of cultural heritage, enhanced the visibility and accessibility of library collections, and developed innovative approaches to library user education. These initiatives provide participants with immersive and multidisciplinary learning opportunities.

Developing students' AI literacy: For example, the built-in AI blocks in mBlock enable students to create mini-AI games based on cultural heritage topics in creative ways. In addition, by deploying a local large language model (LLM) AI assistant and using n8n, students gain practical experience with AI models, system configuration, and knowledge base construction. The visual workflow interface of n8n also supports a conceptual understanding of how AI systems operate.

Enhancing students' digital literacy: By understanding the limitations of AI technologies, such as hallucinations, students become more aware of the importance of digital literacy, critical evaluation, and the responsible use of digital tools. They recognize the importance of learning, how to write effective prompts, search for and critically evaluate AI-generated results, and use information ethically.

Furthermore, students found collaborative learning engaging, such as when students from both libraries worked together to add subtitles to teaching videos.

They stated that through this collaboration, they were able to engage in cultural exchange and broaden their global perspectives.

Conclusion:

Initiated and led by HKSKH Ming Hua Theological College Library, this collaborative project demonstrates how libraries can integrate cultural heritage, technology, AI, digital literacy, and experiential learning into a sustainable framework for user education.

Through the partnership with Rissho University Library, the initiative has shown that special collections and rare materials can be transformed from preserved artefacts into active pedagogical resources. By combining hands-on cultural practices with AI-enhanced tools and immersive environments, the project strengthens both the visibility and usability of libraries and their collections.

This study suggests that libraries in the Asia-Pacific region and beyond may adopt similar collaborative and technology-enabled approaches to revitalize special collections, promote cultural heritage, and cultivate innovative learning environments. Future research could further explore additional cultural heritage themes and expanded applications of AI integration in this context. By connecting scrolls to gadgets—preservation to innovation—this project demonstrates the evolving role of libraries as dynamic knowledge laboratories in the digital age.

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Ogawa Town Library, Kotomi-Kai, the Ichigaya Letterpress Factory, Rikkyo University, and Teikyo University for conducting workshops and tours for the participants from Hong Kong in November 2025.

The official study trip, held from 10–15 November 2025, was jointly organized by Ming Hua College and Risho University. We thank Hong Kong participants who attended solely as learners from the HKSKH Archives, the Education University of Hong Kong, SKH Kei Yan Primary School, Heep Yunn Primary School, St. Stephen's College, SKH Grace Church and Hong Kong Shue Yan University.

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Appendix: Some photos from the study trips in Japan

Washi Paper making-
the Ogawa Washi
technique -UNESCO
Intangible Cultural
Heritage



Movable-type printing
- the Ichigaya
Letterpress Factory



Stitched bookbinding workshops and Special collections at Risscho University	
A stitched bookbinding video with subtitles in Japanese, Chinese, and English, created by Risscho University with assistance from Ming Hua College.	https://youtu.be/GyUV-5i1usY?si=0o7R79vukvEj2EOM 
Taishō-goto – a traditional musical instrument	
Yoshida Family Residence- Important Cultural Property in Japan	