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Digital Forensic Investigation of the Xiyu Pagoda Lighthouse:
A Library-Led Interdisciplinary Research Project

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ABSTRACT

This article provides an update of a lighthouse heritage experiential education project conducted by the Run Run Shaw Library, City University of Hong Kong. This project initiative aims to encourage students to conduct research by leveraging digital technology and archival collections, and hence connect themselves with the communities. The research team followed the six-step 'forensic investigation' to continue its mission of 3D restoration of the lost Xiyu Pagoda Lighthouse in Xiyu Island, Penghu, Taiwan. A new line of inquiry regarding the economic behaviour of the pagoda lighthouse was also extended during the course of clarifying the obscured text of the evidence collected. Beyond demonstrating how technology and humanities are intertwined, the aim of this article is to illustrate how librarians may actively disseminate knowledge through connecting students with archival collections.

KEYWORDS

3D Reconstruction Model, Archival Collection, Chinese Calligraphy, Digital Humanities, Forensic Library Scientists, Lighthouse Heritage Research Connections, Research as Inquiry, Service Learning

INTRODUCTION

A library in general is a collection of resources in a variety of mediums across all disciplines. Librarians' traditional role is to provide counter services and organise bookshelves. Due to the advancement of digital technology, digitisation of archival materials over the past two decades has changed students' borrowing behaviour and allowed students to access archival materials anywhere and anytime. Unfortunately, digital archives are often considered merely a digital collection of dusty books and therefore the access rate is low. This means that librarians, who are obligated to serve and disseminate knowledge to the public communities without undue restriction (American Library Association's Library Bill of Rights), must now go beyond library counters to explore possible ways of employing digital technology to engage more students with archival materials. This notion of academic librarians should be more active and considered themselves not only partners, but prime

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facilitators to connect actors and resources more effectively than any actor alone is argued by a previous article on Lighthouse Heritage Connections Project (LHRC), *Turning a Service Learning Experience into a Model of Student Engagement: The Lighthouse Heritage Research Connections (LHRC) Project in Hong Kong* (Ching, 2018).

Although archival materials are mainly print-based, this does not at all exclude them from being integrated into the growing digital information landscape. In fact, archival materials in print remind us not only to master digital research skills, but also non digital research skills (Schmidt, 2011). In the article *Digital Forensic Investigation of the Xiyu Pagoda Lighthouse*, Wong, Leung, New & Ching (2019) demonstrated how an in-depth understanding of terminologies and relevant socio-cultural background were required in addition to technical digital skills to create a 3D restoration of a demolished pagoda lighthouse.

In order to better understand the relevant socio-cultural background, students should be assisted to conduct field work and connect themselves with the community. Academic librarians have a responsibility to connect students with communities in order to cultivate students' understanding and appreciation of the community's wider and unique context. Harris (2008) states that "the ability to recognise and comprehend the values in the creation, transmission, or receipt of information, is a core activity in the development of "common knowledge between community members." This is something that applies to the present, but is vital to building an understanding of the past, for clear cut information in historical research can be hard to come by.

Building on the above ideas, Run Run Shaw Library of City University of Hong Kong (CityU) developed the LHRC Project. Students from all disciplines were invited to take part in the LHRC Project and contribute their unique strengths to this extra-curricular learning program. This LHRC Project is a service-learning initiative which aims to connect students with the community, prepare students for their future careers, and ultimately empower students to advance from consumers of information to producers (ACRL, 2015).

Other educators have become aware of the benefits of pairing digital humanities tools with traditional humanistic inquiry. The Norwegian University of Science and Technology (NUST) University Library established Mubil-lab in 2012. A team was put together comprised of experts from different disciplines to create two "immersive" books. One book is a treatise of medicinal distillation from 1569, and the other one is a hand-written travel journal from 1670. One of Mubil-lab's activities is to transpose the hand-written travel journal in an Information Landscape (technology) travel with texts and drawings (Angeletaki & Carrozzino, 2017). Then, Mubil-lab librarians created an educational workshop to engage school children 12-19 years old with the aim of inspiring their curiosity of 3D technology and multi-media content.

Similar to NUST University Library's Mubil-lab initiative, LHRC also utilises digital technology to shed new light on historical data and students' curiosity upon their contact with multi-media content. But rather than showcasing findings for an audience, CityU students from all disciplines conducted their own guided research on a demolished pagoda lighthouse, so that students can get an idea of just how much research must take place to illuminate the uncertain context of historical lighthouse sites before a polished finish can be achieved, and how digital technology can be leveraged towards this end.

DIGITAL (3D) RECONSTRUCTION AND VISUALISATION OF THE LOST XIYU PAGODA LIGHTHOUSE

In an earlier article on the LHRC Project, a 6-step "forensic investigation" model developed for the initiative was discussed (Wong, Leung, New & Ching, 2019). The 6-step "forensic investigation" includes (1) Make Observation for Research, (2) Collect Evidence, (3) Set Hypothesis for Verification, (4) Evaluate Evidence, (5) Review Hypothesis and (6) Documents Findings.

The project was framed this way to allude to the similarities between criminal investigations and historical research. Criminal and historical investigations both start from the point of a problem to be