E-Learning and Breaking Barriers:
Teaching Online Cataloguing by Distance

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ABSTRACT

The islands of the Pacific are spread widely, with small populations and limited finances. Many libraries have only a few staff, and collections are small and often based on discarded books. These libraries are not automated, Internet access is limited and computers are not always available. Where computers are used, staff may use these primarily for word processing and basic Internet searching. Automation would enhance library services, but frequent power failures risk data loss, and staff are hesitant to introduce a library management system and have no budget to do so. Many libraries continue to use manual systems such as card catalogs, so must have skills to catalog resources independently. The University of the South Pacific (USP) offers degree level distance programmes to students in twelve Pacific countries, using computer labs at regional campuses with high-speed Internet access. Information and library studies programmes are taught by distance using printed course materials. All LIS Diploma students study a 30 week cataloging course covering descriptive and subject cataloging and MARC. Access to a computer and the Internet is required. For the last two years students have studied online cataloging using Koha, a multi platform and web-based library management system that is Z39.50 compliant. Students remotely access the cataloging module, practicing in a safe environment anywhere with an Internet connection. Retention of key concepts is strengthened, as content from the first half of the course is reassessed in an online environment. Student assessment follows constructivist principles, building knowledge as students locate, download and amend records, then create new records following the correct format and using appropriate MARC tags. Even students not currently using an automated system build familiarity, and skills are transferrable to other systems. Instructions must be clearly written and suitable for ESL students. Technical issues do occur, and prompt troubleshooting is necessary. Checklists are used to encourage detailed error reports and have become part of the teaching process. Student confidence with technology has grown. There is value in introducing other online activities such as circulation and acquisitions for other L/IS courses.

Keywords: Koha library management system; Distance education, University of the South Pacific; Pacific libraries; Cataloging, Koha, Automation, Koha.

INTRODUCTION

This paper will show how technology can overcome some of the teaching issues created by distance study and demonstrate how online cataloging practices can be introduced to Pacific students. It will report on a two year pilot project on the use of the Koha library management system to teach online cataloging concepts. It reveals how Library/Information Studies students studying by distance can remotely access the Koha cataloging module to learn online cataloging processes, sharing assignment tasks and the intentions behind these. The paper will examine issues arising from the project, and discuss how these were resolved. In its conclusion, the paper will consider how technology can be applied to other aspects of distance library education, including face to face teaching environments.

Aims of the project

- To demonstrate how technology can enhance learning for distance library studies students as a compulsory assessed component.
- To reinforce learning by applying key cataloging concepts in a different context.
- To make more use of practical real-life experiences in cataloging activities.
- To encourage consistency in cataloging and closer adherence to cataloging standards.
- To highlight and encourage more specialized uses for computers, and raise awareness of how technology can enhance library services.
- To build understanding and familiarity of library management systems (LMS) and indirectly encourage managers to give serious consideration to library automation.

Background

It is important to understand the situation of libraries and their staff in Pacific Island countries, to demonstrate *why* the use of technology in distance education is a significant innovation. Teaching information and library studies in the Pacific Islands is a challenge. Island states are widely spread, many have small populations and operate under a limited financial base. Although the full range of library types are represented in the region (including school, public, academic, national and parliamentary libraries), many libraries have just one or two staff, and struggle with serious funding issues.

Despite recognising the importance of literacy, Pacific libraries are not given a high priority, as shown by this critical comment from a Papua New Guinea journalist:

"… we must invest in books for children, we must invest in libraries for them, because for a very long time Papua New Guinea leaders and policy decision makers have simply not given this matter any priority at all." (Philemon).

Judy Ma 'ilei's suggests that poorly funded libraries inhibit attempts to improve literacy:

"Developing countries governments therefore attach high priority to literacy and low to libraries. Governments are eager to teach their people how to read and write as this will greatly assist in upgrading the level of the economy, and then not provide people with the reading materials through libraries to continue to maintain this reading ability." (Ma 'ilei)

Many Pacific libraries are small, with collections often based on books discarded from developed countries (which may or may not be relevant). Book budgets may be limited or non-existent, so cataloging is sporadic – there is either a flood of resources or a complete drought.

Library employers often have low expectations, and low salaries mean they may recruit staff with no library qualifications and only a few years of secondary schooling. They may fail to realise the possibility of improvements with qualified library staff. Libraries are low priority, and are often closed so staff can act as substitute teachers, secretaries and lunch monitors. In Fiji, responsibility is often given to an English teacher with no library training, who runs the library between teaching tasks. As a result, many libraries do not run to their full potential.

Although computer use is growing, it is not prioritized in all libraries. This is true of schools, where it is just one item on an equipment list. Rural schools in particular may have limited access to reliable electricity, and inadequate or no Internet access. Computers are a lower priority, and are more likely to be placed in computer labs than the library.

Where available, computers are often used for limited tasks such as word processing and basic Internet searches rather than circulation and cataloging. This is partly because power failures are frequent when staff must revert to manual circulation and cannot search the catalog. In this environment, manual card circulation systems (or even a lined notebook) are more effective - card catalogs operate without electricity. Power loss may also bring damaging power surges, which damage equipment and can cause hardware failure with a total or partial data loss. An effective backup system is seldom in place, except in larger academic and special libraries. There may not even be a computer printout, as printers, print cartridges and papers are often in short supply. The comparatively high cost of equipment and software for a library management system means that this is seen as beyond the reach of many Pacific school and public libraries. In this environment, *is* there a role for technology…?

Although power loss is generally out of a library's control, there are still benefits to automation in larger libraries. Where power supplies are more stable, an automated system can free up time for staff to teach effective identification and use of library resources. Automated systems can generate a printed shelf list, and backup systems are becoming cheaper. Technology and backups are covered in the introductory Diploma course and may resolve some concerns of students.

Internet access

Internet access is limited in many parts of the Pacific, and may be slow, unreliable and expensive. For example, in the Republic of Palau a dial up connection of 56 hours a month costs US$49.95. A DSL connection of 320 kbps is US$759.95 per month or US$9119.40 per year ("Internet Services"). This exceeds the yearly salary of almost all school library staff. Internet connections in Palau schools has also meant that connecting to the Internet in one school blocks connections for other schools further up the network.

Public and national libraries often have limited Internet access for staff. Larger public libraries may offer computers for chargeable Internet use, but there is not always provision for staff use. Many libraries, such as smaller special libraries, often only have one computer.

Academic and larger government and non-government organizational (NGO) libraries are more conscious of the benefits of technology. These libraries are far more sophisticated, and value computers and library management systems for the more complex search options, speed of data retrieval, and improvements to services such as acquisitions. These libraries are well funded and staffed, with a range of services including an automated library management system, high speed Internet connections and access to full-text databases.

As the highest paid positions are in these kinds of libraries, many library students want to build their technology skills to increase their eligibility, but are not in a position to do this within their workplace. There is therefore a strong incentive for students to make good use of an opportunity to use a library management system during their study.

Library/Information Studies at the University of the South Pacific

The University of the South Pacific (USP) is a regional educational institution offering degree level distance programmes (including Library and Information Studies), to students in twelve Pacific countries: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.

Pacific Library/Information Studies students study their programs by distance and are widely scattered throughout the teaching area. Students are often isolated and may be the only one studying library courses in their town, city, island or even country.

Three Library/Information Studies (L/IS) programs are offered. A 6th Form vocational Certificate program consists of five courses covering basic library operations. The degree level Diploma is made up of six L/IS courses, a compulsory English course and three electives. In 2010 a five course Information and Library Studies Minor was approved consisting of five L/IS Diploma courses within the Bachelor of Arts.

This paper will focus on the Diploma cataloging course *LS203: Organising Library/Information Centre Resources,* a 200 level course that runs over 30 weeks (two semesters). It is compulsory for all LIS Diploma students, and covers descriptive cataloging, machine readable codes (MARC), subject classification (Sears List of Subject Headings), Dewey classification (Abridged Dewey) and filing principles. Students are told in the University Calendar that they will apply cataloging standards online, and that access to the Internet and a computer is essential.

USP libraries

The University of the South Pacific library uses the Spydus (Civica) library management system in its main libraries in Suva, Fiji. Athena, a system that is no longer updated, is used for regional campus libraries. Koha is one possible replacement for Athena, which helps to justify the involvement of the Information Technology analyst, who provides technical support for the project and is building knowledge of Koha.

Koha

Koha is an open source library management system developed in New Zealand by Katipo for the Horowhenua Library Trust, and is freely available to download and install. There are no licence fees - an important issue for this zero budget project. Koha runs on Linux, Unix, Windows and MacOS platforms, uses a web-based interface and is Z39.50 compliant. Modules

are available for circulation, cataloging, acquisitions, serials, reserves, and patron management. This project uses version 3 (3.00.01.005), but may soon upgrade to 3.2 for Acquisitions module enhancements.

The web-based environment means that students can log onto Koha anywhere with a working Internet connection - no special software is required. This flexibility means that students do not have to visit a regional campus (some live many hours from their nearest centre). During the two years of this project, students have used Internet cafes as well as home or workplace computers to complete their assignments.

There is considerable interest in Koha in the Pacific, largely because there are no license fees. It is used by libraries such as the Secretariat of the Pacific Community (SPC), Applied Geoscience and Technology Division of Secretariat of the Pacific Community (SOPAC), Solomon Islands College of Higher Education (SICHE), and Nelson Memorial Public Library (Samoa), amongst others. However, the lack of trained IT staff hinders wider uptake, and some libraries have returned to manual systems for some aspects of their operations.

This paper does *not* consider the merits of Koha as a library management system, and is not intended to promote Open Source software over proprietary systems. No other LMS were examined, as choice of Koha was based on expediency – the previous library IT manager had some knowledge of Koha and had installed it in Pacific libraries.

Koha is used in library education, although primarily for classes on library automation. For example, the Koha 3.0 manual was created by postgraduate students at Wayne State University (Brown et al). Texas Women's University also uses Koha for a library automation class ("Koha with class") as does the Université de Montréal Library School (Lozeau), the School of Information Management UiTM in Malaysia (Bakar), as well as Krichel and Lew. Literature on the use of library management systems such as Koha to teach online cataloging appears to be limited.

LibLime, a commercial company supporting Koha, encourages library science educators to apply for *Koha with Class*, a version of *Koha Classic* hosted on their own servers. This contains a full range of features, allowing student access to administrative interfaces for library set up ("For Instructors"). There are benefits to using a web-based stand-alone system if the necessary hardware is not available locally. However, *Koha with Class* was not used for the project, Koha was downloaded and installed on a stand-alone web server housed at USP.

Innovation without disadvantage

Distance education in the Pacific is at a crossroads. Technology can be an important teaching tool, but can only be introduced in an environment which does not disadvantage some students. However, even in the Pacific we are experiencing a technology transition, and many students are now willing and able to access the Internet even in quite remote locations. However, currently use of the Internet seems primarily social (email and Facebook, rather than Google and ProQuest), and a big learning curve may be necessary.

L/IS courses continue to use printed course materials which can be studied anywhere, as many students can only access the Internet intermittently. The university provides Internet access through computer labs in regional campuses based within the twelve countries. All LIS courses receive online support through the Learning Management System: Moodle, which includes electronic assignment submission, additional online resources, and discussion forums and email to ask about course issues. Satellite classes are offered where students can both see and talk with their course coordinator, using video imaging and live Internet.

In 2009 all enrolled students were given the choice of using either a CD version of the *ZSearch* software or the web-based Koha system to download records using the Z39.50 protocol. They could also use a version of Athena on CD-Rom *or* Koha to produce original catalog entries for books. Having two options doubled the technical issues, and at the end of that year, almost all students had tried the web-based Koha system on at least one of their assignments. It was decided to only offer Koha in 2010, as most technical issues for Koha were resolved, and web access resolved installation issues for *Zsearch* and *Athena*.

Overall the amount of time required to successfully complete online tasks is no more than twenty hours spread over 15 weeks. An offline alternative could be provided, but to date this has not been requested. Students generally see the benefits in building their experience with

automated systems, and some have specifically resumed study because of the Koha connection.

Students can practice in a safe environment, anywhere they can access an Internet connection, building familiarity with online systems but errors are not exposed as live records. Some experimentation and exploration is expected during their assignment preparation, and there is little risk of damage. Student access is limited to specific modules and does not include access to system parameters. As a worst case scenario the software can be easily reinstalled, but this has not been necessary to date.

Potential problems

There are always a mix of advantages and disadvantages in introducing any innovation, and this is no exception when teaching cataloging and a number of disadvantages were considered. Students with limited computer access may feel discouraged from starting the course (or programme). Unreliable connections do make it harder to complete this aspect of their assignments. Some students need to travel for Internet access, which is both inconvenient and expensive, and help is not always available. For example, a solo mother of three took a 2 hour bus journey to a regional campus, but could not contact staff for advice when she was unable to connect to Koha. She did not follow instructions to try another computer, and returned home without completing the task. Technology issues may overwhelm some students, and could increase failure rates.

Nevertheless, even with the small number of students in the project, the assignment quality has been good, and online access was not a factor in student failures. Technology may have impacted on their adherence to assignment requirements, but low grades were the result of students not demonstrating a good recall of descriptive cataloging – including basic errors such as capitalization and punctuation. This online component provides an opportunity to reinforce key concepts and improve knowledge retention.

Pedagogy

The project is very hands-on and adds a practical overlay to theoretical learning, addressing the common concern that library education is too theoretical. Ensuring students are confident with technology increases employment opportunities for graduates and improves productivity in automated workplaces. Even if they do not currently work with an automated system, students have valuable skills to offer future employers.

A strong knowledge of independent cataloging is essential in the Pacific, as without Internet access, library staff need to create catalog records from scratch. This course *LS203: Organising Library/Information Centre Resources* is compulsory for all LIS Diploma students. Traditional printed cataloging standards such as *Concise AACR2*, *Abridged Dewey, Sears Lit of Subject Headings* etc continue to be useful in the Pacific, where so many libraries are still manually based. However, teaching approaches can enhance learning using new techniques and combining the old world with the new.

A teaching dilemma for the Pacific library science educator is to meet the educational needs of students from sophisticated libraries, as well as students from far more basic working environments. Both groups need relevant and challenging course content which does not advantage one group over the other. Both sides could benefit from a closer appreciation of the situation of their fellow students.

The principle aim of this project was for students to explore online cataloging, but it was expected that students would build their general skills with library management systems. Although an increased knowledge of Koha will undoubtedly assist staff working in libraries with the same system. Concepts covered are generic, making the new skills applicable for *any* online library system. However, feedback from some shows this is not always well understood:
"It is helpful for those who are using the KOHA library system. But what about us who are not using the KOHA but other library system?" (2010 student)

The student agreed that downloading using Z39.50 protocols was helpful and saves time, but clearly long-term benefits need to be more clearly stated in future.

Pacific library staffs were quick to make use of Cataloging in Publication data, and more recently the Internet to locate catalog records in web-based library catalogs. This is used to

speed up record creation, either for cards or computers. Now a growing number can also use Z39.50 protocols within a library management system to download records directly and amend these to suit their needs.

Online cataloguing principles are assessed as tasks within the last three assignments for the course. These tasks follow constructivist principles, with students building new knowledge. The first task is very basic: location and bibliographic verification of an assigned record, then adjusting the content in specific ways using correct formatting and appropriate MARC tags. Next they expand their skills by downloading records using Z39.50 protocols and apply what they have learnt to amend them. This also demonstrates applied learning – students learn *AACR2* in a theoretical print-based model, but this practical exercise transfers their knowledge to a new situation, to strengthen and reinforce the learning. Finally students combine their skills to create new records. To prevent cheating, each student receives unique fabricated details. To make this as swift as possible, journal article titles are used with subtitles switched, author's details transferred between records, and publisher details taken from course bibliographies. Marks are assigned for accuracy and full details, so students have a strong incentive to provide clean, unique records. This teaches good skills of error correction and a stronger understanding of the need for consistency.

Students build familiarity in an online environment with no real records or risk of data damage. They also build critical skills and compare Koha with either a manual or an automated system in their final assignment.

Second language issues

English is the language of instruction at the University of the South Pacific. This may be the second or third language for almost all Library/Information Studies students. Compulsory English classes are provided at different stages of study. Students must pass an English class before entering the Diploma program, pass the English Language Skills Assessment (ELSA) test before beginning 200 level studies, and complete an advanced English course before graduation.

LS203: Organising Library/Information Centre Resources is still a challenging course for ESL speakers - the course was recently raised to 200 levels to recognize this complexity. English language issues are exposed in a number of ways, for example the language of *The Concise AACR2* is challenging even for English as a first language speakers, despite the compiler identifying key rules and aiming for clear explanations. Similar issues apply with instructions from *Sears* and *Dewey* resources*.*

Instructions

Educators the world over agree that students do not always read instructions carefully. This is also true for LS203 students, and the necessity must be stressed early in the process. Instructions are carefully designed for ESL students. Text alone is hard to follow, but screen shots work well to show stages step by step - students match instructions to screens on Koha. However, use of images must be limited, as they increase file size and slow downloads (a significant issue for students with bad Internet connections).

The first instruction sheet shows how to sign on to Koha (a process fraught with difficult for the novice), followed by accessing the cataloging module and basic navigation through MARC records. Basic processes follow, such as opening records, entering data and saving the results, and finally, downloading more records using Z39.50. The final section includes common error messages and their solutions.

Including all instructions in a single guide proved overwhelming, but more complex instructions can be safely introduced once basic tasks had been mastered. The second sheet (which refers back to the first where necessary), shows how to create a new record, expand fields and add rows. This is an iterative process – instructions are reviewed regularly and can be updated using the online course pages.

Technical problems and troubleshooting

Koha is not an "out of the box" LMS, and requires considerable IT support (Helling 702-707). Without assistance, technical issues could make the entire project unworkable. Due to staff turnover the project has involved three IT analysts. Koha is a voluntary side issue and cannot claim priority. Some issues remained unresolved for some time.

To be a positive learning experience, prompt troubleshooting is necessary. Passwords require interpretation (upper or lower case, zero or letter O etc). Some issues could not be controlled – for example settings on older lab computers caused access problems, and there were unexplained server slowdowns. The advice is to move to another computer. Students shared information about "good" computers and worked in rotation so they could pass over to the next student when they had finished. Patience is needed.

Students who are not confident with technology may also struggle with English language issues - it is not easy to explain a technical problem without a specialized vocabulary. Often not enough information was provided on the specific problem - typically emails or a voicemail message were very short and simply stated the student could not access Koha. This wasted time while the problem was clarified.

Basic checklist

As L/IS graduates need to confidently explain IT issues, fault reporting is now integral to the teaching process. Students are asked to complete a basic checklist before making contact:

Table 6: Basic Checklist

Basic Checklist: Describe what went wrong - be specific:
How far did you get? Can you sign in? (What page has the problem?) Describe any error messages (Write down the exact words) Does the problem occur when you are on campus or off campus? Give other relevant information (eg: Did you close the browser and restart?)

Student feedback

Student confidence and understanding of technology has grown during the course, with positive feedback from students who have completed their involvement in the pilot project. Comments include an acknowledgement of the benefits of this aspect of the course:

"I feel that learning online processes is a big advantage especially since most libraries are fully computer driven. I hope that there are more courses on online library processes for the Diploma."

Since completing the course this student emigrated to Australia, where computers in libraries are more common. She regrets there are not more opportunities to build her skills:

"Feel like I've forgotten all the cataloguing processes that I learnt, more's the pity, seeing that I quite enjoyed cataloguing." (2009 student).
Another student found the online processes quite straightforward:
"I found the koha system easy to work with. Its simple and no complications… at the beginning I was not sure, but after familiarizing to the koha system, it was simple, easy to go back and amend my records." (2010 student)

Another rural student needed to follow instructions without assistance, as she was unable to attend satellite tutorials because of safety issues in returning safely to her home late after dark. She commented that she found the instructions confusing, but that practice helped:

"I found KOHA ONLINE. a bit confusing and difficult at first, but when I started actually practicing it, it became easy… it has made library a home for me as I now understand the system. i can answer the question of why, what, where, when and how based on library." (2010 student)

Other students also described their initial hesitation, followed by their relief when things began to make more sense:

"to tell you the truth I enjoyed using Koha though i got lost at first but when you explained to me how to go about using it then it was ok… i had tried downloading, amending, saving records and also used koha to create new records in my assignments but i did not face any problems and i also did it well." (2010 student)

"It took sometime for me to find my way around/navigate initially. I guess because it didn't have GUI which makes it easier to navigate. But otherwise its basic format was quite good once you got the hang of it… It has been sometime since I used Koha but I don't think I would have a problem working with it if I did get the opportunity to do so again." (2010 student)

Teaching with Koha: Future plans

Currently the Koha catalog module project is run on a shoestring, and there is limited time for teaching staff to build expertise in all features. Nevertheless, exploring the functionality of Koha is a priority. In future it is intended to extend use of Koha within the LS203 course to include an understanding for students of Personal Name Authority Records.

Although some library science teaching areas such as online catalog searching are more suited to a live environment, there is also potential for other modules within Koha to be useful in distance courses covering areas such as acquisitions and circulation. This will increase student participation in practical exercises, while building their overall understanding of library automation. There is a strong likelihood that other automated tasks can also be taught successfully in a face-to-face teaching environment.

CONCLUSION

This paper has shown that a library management system such as Koha can be successfully used in distance study to teach topics such as online cataloguing, even in a challenging environment where some students have limited Internet access. This approach follows sound educational principles to reinforce long-term learning, and the web-based environment means this can be used even when facilities are not currently available in the student's library. Graduates have a wider skill set which should increase their employment opportunities. The project also builds student confidence in troubleshooting technical issues, which may be important when there is limited local computing expertise.

Commitment is required from both staff and students, and adequate support is necessary to resolve logistical issues which could inhibit access. The project worked on the principle that no student should be disadvantaged, and where necessary alternatives should be made available to students with no computer access. Strong support gives all students the confidence to succeed. The project satisfies students working in well resourced libraries, but also provides an achievable challenge for students from libraries with limited computer access.

There is a need for library educators to teach content that more closely reflects current and future workplace practices. This paper has shown that library management systems can be used to teach online principles in a practical and realistic environment. This could be extended to other aspects of library education including acquisitions and circulation activities, and may also be useful in face-to-face teaching situations.

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