

OER-enabled online micro-courses for teachers - Remixing for resilience in the South Pacific

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Abstract: Open, distance and flexible learning (ODFL) is a key strategy for building resilient education systems in the Pacific, given the difficulty of providing more traditional campus-based learning for widely distributed and culturally diverse learners. However, few of the teachers currently in-service have received training in or through ODFL. It is therefore necessary to make such training available in ways that both model and build such capacity in cost-effective and scalable ways. This paper explores the rationale for and design of an open learning ecosystem as exemplified in a micro-course called Digital Skills for OER Sharing (DS4OERS), which is the first of several courses that have been developed or are in development under the Pacific Partnership for Open, Distance and Flexible Learning led by the Commonwealth of Learning. The platform and course were designed to be as open and flexible as possible and use was made of digital badging both to encourage active learning and to allow for multiple exit and re-entry points. Moreover, the pedagogical approach and technologies deployed were designed for remix to build resilience for professional development solutions in the region. Feedback from participants in the first mediated iteration of the course offered to 1560 teachers will be shared as will core learnings which have influenced subsequent design and implementation. Published as OER using free and open source software digital learning environment, the course was remixed and deployed by the Ministry of Education, Sports and Culture in Samoa demonstrating the potential for scaling professional development using open online micro-courses.

Key words: OER, micro-courses, Pacific

Introduction

Since its formation in 1987 by Commonwealth Heads of Government, the Commonwealth of Learning (COL) has been promoting the use of open and distance learning (ODL) to provide access to and success in learning opportunities for youth and adults unable to access traditional campus-based provision. The Pacific region is one in which ODL could play a significant role given small, dispersed and remote populations and limited access to secondary and post-secondary opportunities in rural and outer island locations. In addition, campus-based provision has often been disrupted due to tropical storms, volcanic activity, tsunamis, drought and, more recently of course, the COVID-19 pandemic. Despite its potential, and some interesting recent developments, outside of New Zealand the potential of ODL in the Pacific remains relatively untapped (Hollings and Naidu, 2020; Mays, 2022). This paper outlines the process that was followed to address one part of the challenge.

Literature review and context

The recent pandemic has accelerated the use of technology-enabled learning approaches, but even before the pandemic, few teachers were adequately prepared to embrace technology and adapt their practice accordingly (Mtebe and Raphael, 2018). As Stutchbury, et al., (2019) suggest, change in education practice requires co-construction of new understandings through participation in and reflection on that practice. This includes reflection on the use of Open Educational Resources (OER) in teaching, why it is of value and decisions about when to adopt or adapt OER content (Orwenjo and Erastus, 2018, 2021).

However, there is some evidence that the more frequently teachers engage with OER, the more open their practice generally becomes (Nascimbeni and Burgos, 2019) as well as improvements to assessment practice (Sandanayake, 2019). Very often, teachers need extra support and guidance to adopt OER (Tang, 2020; Tang, et al., 2020) and such support is probably best managed within the school context by providing practical bite-sized training opportunities using the very technologies and approaches we are trying to promote (Allela, et al., 2020; Moon and Villet, 2017; Stutchbury and Woodward, 2017).

In a project supported by the New Zealand's Ministry of Foreign Affairs and Trade, PACFOLD Learn, which is hosted by the University of the South Pacific, has partnered with COL to implement a project to contribute to enhanced capacity and efficiency of Pacific education sectors through greater use of innovative delivery mechanisms and technology.

As part of workstream 3.2, COL partnered with the OER Foundation to design, develop and facilitate an open online micro-course on *Digital Skills for OER Sharing* (DS4OERS). Lessons learned from the experience gained from the from the facilitation of the inaugural cohort offering were used to make some revisions to the programme, whereafter it has continued to be openly hosted to allow stakeholders to access, use or adapt as best suits their need. This paper outlines the process followed, the underpinning assumptions made and some of the lessons learned from this experience.

Process

Course design and development

The course was developed based on the curriculum outline approved in consultation with COL.

It was designed to run over 3 weeks with a workload of 3-4 hours a week. Six digital badges were offered with a Certificate of Completion for students who achieved the six badges.

The six badges were:

Digital badge	Requirement
OER Image	Develop a printable teaching resource in PDF format in a curriculum area of your choice to be used in a classroom incorporating openly licensed images you have found on the internet. Share it online as an OER under an open content licence.
OER Diagram Remix	Develop a chart, diagram, or graphic organiser in a curriculum area of your choice, that you can use as a single page printable resource in a classroom. Include SVG graphics you have sourced on the internet and Share it online as an OER under an open content licence..
OER Audiographic	Make a static image audiographic (in a subject area of your choice), to use in a lesson. Share it online as an OER under an open content licence.
OER Lesson Plan	Prepare a lesson plan in a subject area of your choice, including three teaching resources, and different activities and assessments for different parts of your lesson. Share it online under an open content licence.
DS4OERS Participant	Complete and pass an online quiz on core concepts covered during the DS4OERS course.
OER Practitioner	This is an cumulative badge awarded to DS4OER participants who have achieved the five preceding badges. Holders of the DS4OERS Practitioner Badge will be awarded a Certificate of Completion for the course.

Two surveys were administered during the course. First, a Fair and Reasonable Practice survey to gauge access to technology and associated entry level skills in technology and knowledge of Creative Commons licensing. Second, a succinct Course Evaluation. The survey results have informed the findings summarised below.

Technology and related design features

The project implemented an open source, component-based digital learning ecosystem (Lane and Goode, 2021). Course materials were authored in Mediawiki, which provides version control for adapting and remixing new versions of the course. Using open source scripts, the course materials are published to the WordPress Multisite content management system providing a low cost cloud-based solution for hosting online courses. Student interactions are supported using the Discourse platform for discussions in addition to the Mastodon micro-blogging platform used as a social media site for learners.

The course materials were published on a WordPress Multisite hosted on the following COL subdomain: pacificopencourses.col.org.

The course has incorporated several key design features:

- Use of a **digital badging model** to support an activity-based learning approach whereby teachers complete a series of learning challenges to produce OER for future inclusion in the national OER collections being implemented for the Pacific Partnership. After the completion of the four learning challenge badges, on submission and approval of the OER for use in the classroom plus successful completion of a basic knowledge test, participants are awarded the “OER Practitioner” badge and the Certificate of Completion.
- Use of a range of **Free and Open Source Software (FOSS)** applications and online technologies to build capacity in improving digital skills of teachers using a learn-by-doing approach. So, for example, learners had the opportunity to build skills in using LibreOffice Writer, LibreOffice Draw, Audacity and Openshot. In addition, learners also gained experience using distributed online communication tools like Discourse and the Mastodon social media platform. As all tools are FOSS, the applications can be downloaded by teachers and Ministries of Education without incurring software licensing costs, and as a low-cost delivery infrastructure, this cloud-based infrastructure can be replicated by any Commonwealth country.
- Use of automated email campaigns for sending course instructions using Mautic (an open-source email automation application) to accommodate **both cohort instances as well as open registration formats** in the future. This could help COL provide “just-in-time” learning opportunities that are not date bound.
- Implemented a design to **facilitate ease of remix and reuse** for different regions. For example, all the Pacific DS4OERS images have been categorised to identify replacements for alternate regional versions of this OER course. The course can be scaled to support hundreds of thousands of teachers across the Commonwealth in different regions without incurring significant costs for redevelopment other than minor customisations, for instance, dedicated regional discussion forums.

Registrations

The promotional strategy adopted for the courses succeeded in achieving 95% of registrations from Pacific countries. Moreover, 84% of the course registrations were from Fiji which had actively promoted the short course as illustrated in Table 1.

Table 1: DS4OERS course registrations

Country	Number of registrations
Australia	4
Fiji	1270
Kiribati	46
Nauru	2
PNG	48

Samoa	31
Solomon Islands	27
Tonga	21
Tuvalu	26
Vanuatu	14
New Zealand	3
Cook Islands	2
Tokelau	3
Commonwealth Pacific countries	1497
Marshall Islands	1
Philippines	4
Total: Pacific Countries	1502

Because this was an open course, even though it was targeted primarily at teachers in the Pacific, it also attracted 79 other teachers from 21 other countries around the world.

Findings

The data collected from the ‘Fair and Reasonable Practice’ survey confirms that the DS4OERS course is serving capacity development needs in the region and most teachers have access to the technologies required to participate in this online course.

Focusing the learning challenges on the development of printable OERs for use in the classroom was an appropriate decision given that 87% of respondents confirmed that there are facilities to print teaching resources at their respective institutions, while only 55% of respondent reported having access to a Learning Management System. Consequently, the DS4OERS course will have wide utility for teachers working in the Pacific region.

Access to a computer, laptop, notebook or Chromebook at home was surprisingly high with 89% confirming that they had access to these computing devices at home. However, this data may not be valid for all Pacific islands given that 75% of respondents reside in Fiji. Based on the self-assessments of basic computing skills (managing files and word processing), only one in ten participants rated their knowledge as “Beginner”. However, when it comes to more advanced skills like using graphics and audio software, roughly half of the learners rated their knowledge as “Beginner” with only 4% rating these more advanced skills as “Excellent”.

Practical experience in creating or remixing OER was on the lower end of the spectrum with 80% of participants not having applied a Creative Commons license before, or unsure of whether they had applied a CC license before. Moreover, 79% of respondents agreed that teachers should freely share the teaching materials they create.

Drawing on site analytics from the course site, participation levels mirrored a typical MOOC participation profile with high traffic over the 1st few days, tapering off for the duration of the course and dips in participation over the weekends.

The levels of engagement of learners working through the course materials were comparatively high for a MOOC format, as evidenced by the average session duration and very active forum discussions. The course achieved an average session duration of 13.37 minutes, which by comparison is 56% better than the most popular MOOC offered on the OERu platform, which achieves an average session duration of 8.57 minutes.

Clearly learners were working through the materials and remained interested to continue spending time on the course site.

The average for time spent per week, as derived from the course evaluation survey, was rated by respondents at 3 hours per week, thus achieving the design specification of 3 to 5 hours per week. 83% of learners reported that they were able to complete the activities under 5 hours per week with only one in ten learners spending more than 6 hours per week.

However, submission rates of completed OER resources were disappointingly low. The data suggests that low digital literacy skills associated with the implementation of minimum copyright requirements, being a major contributing factor to learners completing the badges on offer. For instance, many DS4OERS learners were not familiar with basic editing skills needed to insert hyperlinks in a word processor, simply copying and pasting full URLs for attribution purposes. Also, many submissions did not contain URLs referencing the source of open images contained in the OER submissions and in some cases the incorrect licenses were cited. These approval processes require a knowledgeable facilitator to validate the license attributions by visiting the source images and checking for remix compatibility of the open licensed for the derivative work.

The project set up a Moodle submission site to allow for repeat submissions in cases where resources did not meet minimum copyright requirements. The facilitators did not attempt to evaluate pedagogical quality of submissions and restricted approvals to resources meeting minimum copyright requirements. Unless the submissions were approved, they were not made available on the Moodle site for fellow learners to access to ensure adherence to copyright provisions.

One third of the 1st challenge submissions were in breach of copyright, and in all cases the facilitators provided feedback on how to meet the minimum requirements inviting resubmission. Similarly, about one third of 1st submissions did not contain a copyright statement by the author releasing the resource under a compatible OER license, which would not permit legal reuse of the resources as OER. One learner needed 8 submissions before earning the corresponding badge! On average, for all submissions, one in four challenges have been re-opened for submission (noting that previous multiple submissions are not recorded in this data).

This provides evidence that the badge awarding process should not be automated based on the upload of a file, as these resources need to be checked for copyright compliance, otherwise the institution hosting the course website may be exposed to legal risks of hosting content in breach of copyright. On the positive side, learners were gaining valuable digital skills and the course could function as a provisional filter for checking copyright compliance before uploading OER deposits in national OER online collections.

As of the date of this paper, the following badges have been awarded.

Challenge	Total	Achieved	Re-opened	Rejected
Image challenge	51	38	11	2
Diagram remix	35	27	6	2
Audiographic	20	15	3	2
Lesson Plan	24	18	4	2
Totals	130	98	24	8

As an open course, learners can continue to submit resources as they build digital skills for OER sharing.

The September 2021 cohort of the course has generated 130 OER resources that meet minimum copyright requirements for uploading contributions into the OER online collections. We encountered two cases of blatant plagiarism where the offending participants copied submissions of other learners, illegally claiming ownership of the materials by applying a copyright statement without attributing the source of materials. In both cases, we suspended their user accounts on all systems and revoked the badges issued for plagiarised submissions.

While the submission rates of the DS4OER course evaluation survey were low (only 30 completed submissions to date), those who have provided completed responses confirm high levels of satisfaction. For example, 83% of respondents agreed that they were satisfied with the course and 90% agreed that they would recommend the course to others.

There is evidence of positive learning as rated by learner self-assessment. Prior to the course, approximately 40% of participants evaluated their ability across most dimensions as “Insufficient” or “Marginal”. After completing the course, no learners rated their knowledge as “Insufficient” with only about 6% stating that their ability was “Marginal.”

Personal feedback provided by respondents is positive, as evidenced by this selection of comments from learners shared via the ovulation survey:

- “I have learned a lot of new things which will help me in my work as an educator.”
- “I have learnt a lot from this course such as the free apps like Openshot, Audacity and LibreOffice. Knowledge on Creative Commons and copyright has been an eye opener and the best part was doing the challenges. It was fun and really challenging.”
- “Every step of the way! In every session and every topic, I either find something new or additional information to strengthen my prior knowledge or an app to download to make my work easier. I am more than satisfied and thank you for offering this course.”
- “I would advi[s]e all teachers and educators to do this course and it will be good to have this course or similar to be part of Bachelors of Education programs at FNU, UOF and USP for future teachers.”
- “A must-attend course considering that most are now using virtual learning classrooms to educate students.”
- “[The learning challenges] are the best part of the course. Practically going through the tasks are challenging and yet fulfilling. I am ever so thankful for the wealth of knowledge and skills acquired through learning challenges alone.” Extract of comments regarding aspects of the course learners especially liked:
 - “Yes this course allowed me to work on my own pace”
 - “The sessions were well organized and well outlined.”
 - “Using computer in lesson delivery.” • “Digital literacy”
 - “Regular updates were forthcoming and encouraging.”
 - “I liked everything about the course and the sharing of experiences between all the participants. The course materials were very user friendly.”
 - “Yes, I loved the mastodon, Audacity and Openshot the most. Also there was a lot of reading and self learning that I enjoyed. ... I loved doing all the challenges.”
 - “I really liked the knowledge on the materials that we can use from internet. Before, I used to download and use any material which came my way. I even liked the creation of audiography as it taught me how to make my lessons interesting and understandable online.”
 - “I especially like the value of kindness instilled in each participant to share resources that we've developed to make our children, our world a better place. Thank you”

Extract of comments regarding aspects of the course learners disliked:

The majority of comments in this category stated there were no issues respondents disliked, however a few aspects raised are reported below:

- “Time constraints for me personally to cope with studies, this course, school work and household chores.”
- “The timing was a bit short. However since we have no students now and online teaching it helped.”
- “I found there were few existing resources to adapt.”
- “Learning to use Draw took me a long time, with results that I find very amateurish design-wise”

Finally, there is potential to seed a community of support. 47% of the respondents provided contact details indicating that they would be willing to consider become volunteers for future students.

Reuse and remix

Adopting a FOSS component-based learning ecosystem has facilitated ease of reuse and remix of the original version of the course given that COL published this course as OER.

The Ministry of Education Sports and Culture's (MESC) innovative Lifelong Learning Lab being implemented under the auspices of the Samoan Knowledge Society Initiative in partnership with the UNESCO Office for the Pacific States has adopted the DS4OERS course for training of teachers in Samoa. The Ministry has implemented their own WordPress Multisite instance and published a Samoan version of the course (<https://course.milll.ws/ds4oers/>). The Ministry has also implemented their own cloud-based Discourse instance for forums and have their own cloud-based version of the Moodle course hosted on their domain. A key feature of this federated course site solution is that learning interactions are syndicated in a twitter-like course feed meaning that future learners engaging in the PACFOLD-COL version could interact with Samoan teachers participating in the MESC hosted version of the course.

The Ministry in Samoa is planning a train-the-trainers instance of the course for Ministry staff and IT admins located at individual schools who will function as local support mentors for teachers who take this online course in the future.

This reuse and remix example demonstrates the resilience of OER and FOSS technologies for different nations to increase the return on investment on ODFL implementing open solutions.

Conclusion

A major challenge in offering a capacity development course like DS4OERS, which focuses on open licensing and OER publishing, concerns the minimum requirements and associated digital skills for legal copyright compliance when publishing OER. Copyright in a digital world is complex, and most initial submissions from learners were in breach of copyright, and as a result these submissions could not be published openly for sharing. While engagement levels of participants working through the course materials were high, the complexities associated with copyright compliance in a digital world constituted a major barrier for many learners to submit resources for badge completion.

Nonetheless, the course is rated highly by participants who completed the course evaluation. Openly licensed, and developed using low cost component infrastructure for hosting on WordPress, the course can easily be replicated and has the potential of becoming the largest capacity development initiative for open education in the school sector. As noted, the course is already being adapted for use by other stakeholders.

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