SPECIAL ARTICLE

OERs as innovative teaching and assessment activities during the pandemic

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ABSTRACT

This article discusses the Online Educational Resources (OERs) Movement and why OERs are so highly recommended by international collaborative organizations for the attainment of an inclusive, learner-centered and development-centered open education. The second part recounts how the creation of an OER served as a viable alternative teaching learning and assessment strategy for achieving course outcomes during (but not limited to) pandemic times. It showcases the outputs of students of the Doctor of Health Professions (DrHPEd) program taking a course on Quantitative Data Analysis (HPEd 391) during the first semester of AY 2021-2022. The process of making an OER was challenging. At times, the students felt that they were doing things beyond the scope of a course in quantitative data analysis. But everyone agreed that because of the degree of student engagement involved, the sense of fulfillment at the end was intense. The creation of an OER was a realistic, context-based and relevant final output which most of the students intend to use for their real-life advocacies. It was truly an exercise which demanded integration of all dimensions of technological pedagogical and content knowledge (TPACK) and yielded a personal and unique output which exhibited the highest order of learning outcomes - at the level of synthesis. And what may have appeared 'extra-curricular' at first was actually simply a more authentic assessment.

Keywords: *OERs, TPACK, Student Engagement, Authentic Assessment*

Online Educational Resources (OERs)

Online Educational Resources are "educational materials made freely and legally available on the Internet for anyone to reuse, revise, remix and redistribute" [1]. OERs include learning content such as open coursewares and may involve websites, simulations, text files, images, sound and videos in digital format. These learning resources or objects are not limited to digitalized learning materials produced and shared by the faculty as supplement or alternative to the traditional textbooks but may be any teaching resources such as the course syllabi, discussion guides, activity guides, as well as assessment activities: quizzes, repositories and question banks. In short, OERs are any resource that guide and support teaching and learning that are digitalized and made open for students, teachers, and other institutions. The term was introduced in 2002 in connection with the need to promote 'the free flow of ideas by word and image [2]. A year later, in 2003, the World Summit on the Information Society issued its Declaration of Principles calling for a commitment to 'build a people-centered, inclusive and development-oriented information society where everyone can create, access, utilize and share information and knowledge." [3]. Through the years, there were increasingly more calls for the mainstreaming of OERs: the 2007 Cape Town Open Education Declaration, 2009 Dakar Declaration on Open Educational Resources, 2012 Paris Open Educational Resources Declaration, and 2017 Ljubljana OER Action Plan which called for member states to mainstream OERs in order to create inclusive knowledge societies and achieve the 2030 Agenda for Sustainable Development, specifically SDG 4 (Quality Education), SDG 9 (Industry, Innovation, and Infrastructure), SDG 10 (Reduced Inequality), SDG 16 (Peace, Justice and Strong Institutions), and SDG 17 (Partnerships for the Goals). Finally on Nov 25, 2019, during the 40th General Congress of the United Nations Educational, Scientific and Cultural Organization (UNESCO) held in Paris, the Recommendation on Open Educational Resources (OER) was adopted [4].

The objectives of the Recommendation spanned five action areas:
1. Building the capacity of stakeholders to create, access, use, adapt, and redistribute OER.

2. Developing supportive policy and regulatory frameworks for OER.
3. Encouraging the development and adaptation of OER.
4. Nurturing the creation of sustainability models for OER.
5. Facilitating international cooperation.

Why are OERs so highly recommended?

The benefit of using OERs has mostly been directed towards its effect at reducing the cost of learning materials. It is possible to replace the traditional expensive textbooks with OERs providing free and unfettered access through the creative commons license, which grants the 5R legal permissions: Retain (make and own a copy), Reuse (in a wide range of ways), Revise (adapt, modify, improve), Remix (combine), and Redistribute (share). In so doing, it resolves the fundamental tension between what is possible and what is permitted. This is a tension that has existed since the advent of the internet and digital technology. The rise of the OER Movement with its call for Open Education is not just about making education more affordable, but extends to making it more learner-centered, inclusive and progressive.

Adaptive responses also emerged both for the students, teachers, and the institutions during the time of pandemic. Access to online educational resources served as a bridge to ensure continuity and enhance education during the time of the pandemic especially in the Philippines. The open educational resources continued to be a growing body of relevant, teaching, learning, and research resources that have been adopted.

OERs support the universal access to information and knowledge

OERs contribute to inclusive, equitable, open, and participatory education [5]. If educators are capacitated to create, access, utilize, and share information and knowledge intentionally, they are empowered to use active and collaborative pedagogical approaches. The use of learning materials, OERs and ICTs that are non-discriminatory, learning conducive, learner friendly, context specific, cost-effective and accessible to all learners will create inclusive information and knowledge societies, and contribute to the achievement of the 2030 Millennial Sustainable Development Agenda.

OERs enhance the academic freedom and autonomy of teachers

Access to quality teaching and learning materials is cost beneficial for teachers since it significantly decreases the time and expense needed in preparing learning materials. Because they are kept in the public domain and people are free to use, modify them, it is expected that the quality of the

OERs will improve in time. They encourage self-directed learning for all and facilitate the goal of achieving high-quality learning that is dynamic in delivering learning opportunities.

OERS have been shown to improve learning outcomes

A study by John Hilton found that the use of OERs in higher education courses was associated with increased course throughput rates (which refers to the proportion of students who successfully complete a course within a given timeframe) in both face-to-face and online courses. This suggests that OER is a promising avenue for increasing academic success and supporting students with financial barriers and diverse learning needs [6].

Another research by Fischer *et al.*, studied the impact of adoption of free OERs on student outcomes, specifically course completion, class achievements, and enrollment intensity. Results showed significant differences between the students who used OERs and those who did not, with the group who used OERS having better outcomes [7].

OERs improve Student Engagement

Because of the 5R permissions, students can actively engage in new thinking: revising and improving OERs and creating their own OERs. This Open pedagogy is rooted in constructivism which says that people learn when they DO things. OERs allow students to become content creators and not limit them to being only consumers of content. And as content developers they can create interactive systems and not just static content. An example of a static content would be the Blogs, while interactive systems would be Wikis. The learning activity becomes a collaborative work, which involves not just the student and peers but the faculty as well. OERs allow for active and interactive pedagogy [7].

OERs improve Faculty Engagement

Because they can curate instead of create their teaching materials, teachers have more time to engage with discussions with students and in giving valuable feedback. Dr. David Wiley, Chief Academic Officer of Lumen Learning, speaks of how OERs has led to the transformation from Disposable assignments to Renewable assignments. Examples of Disposable assignments are book or journal reports. After they are read and graded, they are filed away, often generating no novel insights for the faculty. On the other hand, if the students are asked to create their own OER or revise an existing one, then they are engaged in deep and contextual learning. The outputs are novel and unpredictable because each student creates what they would. "*Students see*

value in doing them. Teachers see value in grading them. The work itself adds value to the world." [8].

OER construction can serve as Authentic Assessment

Dr. David Wiley further recounts how, while teaching a course on Project Management for Instructional Designers at the Iowa State University, he used a textbook created for Business Managers. Because the textbook was an OER, he decided to make a semester-long activity for the students to propose ways on how to modify the existing textbook to fit the purpose of their course. If their ideas were good – it became a part of the OER to be used (and improved) by the next batch. Such a project was so much more enjoyable for the students to make and for the faculty to grade. And since it responded to a real need, it was both pragmatic and very meaningful. Both the student and the teacher stand to benefit with this alternative teaching learning activity [8].

The level of understanding that is needed to write or create an OER compared to what it will take to pass an MCQ demands a much higher order of thinking. It requires understanding the material to the extent that you can apply it to another context and use that knowledge to analyze, deconstruct, reconstruct, and create something new. It is cognitive skills at the highest level of Bloom's Taxonomy.

OER Adoption by Faculty.

In 2014, the Babson Survey Research Group, which has been studying the role of OERs in higher education since 2009, conducted a national survey of 2,144 faculty members in the United States. They found that the faculty are the primary decision makers as regards the adoption of OERs in classes. However, majority of the faculty (2/3) remain unaware of OERs. Those that do, appreciate the concept of OERs and are willing to give it a try. They said that the barrier to adopting OERs would be the perception that it takes a long time to discover and evaluate OERs [9].

OER Initiatives grew along with the development of distance learning. During the COVID 19 pandemic, due to the shift to remote learning and pure online platforms, faculty awareness and adoption of OERs as course materials grew dramatically.

Sample OERs from varied health professions

One such course that implemented the creation of an OER as a final requirement during the pandemic was HPEd 391: Quantitative Data Analysis, a course in the DrHPEd program

of the UP Manila National Teacher Training Center for the Health Professions (NTTCHP). The pandemic has imposed stringent limitations to mobility which would seem to be an obstacle to doing robust research. But in the process of creating an OER, it was demonstrated how online processes were available and sufficient, and so it was possible to perform the following research activities in-depth:

1. Focus on a feasible and relevant research problem
2. Search online public databases for reliable and robust data
3. Do online key informant interviews through digital communication technologies
4. Analyze results using online quantitative analytical softwares
5. Come up with an advocacy paper directed to a targeted audience

The four OERs linked in this article were submitted by their respective authors as the final output for the course. Each contains the objectives and the target audience and advocacy statement. The authors recount the process of making the OER and their impression on the experience.

A. IT'S TIME TO SMILE AGAIN : A Position Paper on the Status of the Nation's Oral Health Care

The oral health of children in the Philippines is in a very bad state. The latest DOH Survey showed that 87% of Filipinos suffer from dental caries, and that 77% of Filipinos have never visited a dentist. The Oral Health Program of the DOH is outdated and seemingly unevaluable with the latest data posted in its official website being from surveys done in 2011. And there seems to be no political will to have oral health care bills passed in legislation. Several bills have been initiated, but none have gone past the first reading.

Some research and activities of the UPCD Department of Community Dentistry were presented that studied the condition of several regional health units. It turned out that not only do we not have enough dentists to serve the dental needs of the country, but the dental clinics of the RHUs are poorly equipped.

The objectives of the OER was to create awareness about:
1. The dire straits of oral healthcare in the Philippines
2. Alternative online education and training of oral healthcare providers

Data was gathered through online searches on the official website of the DOH and key informant interviews with the head of the Community Dentistry program of the UPCD.

The OER is targeting all dentists to try to encourage them to volunteer a bit of their time for dental education of whatever accessible population they can reach. The bottom line is that efforts CANNOT stop because we are so far from achieving Oral Health for all. This OER can serve as a template for future status reports.

Link to the OER:
https://drive.google.com/file/d/16MySus3XWD1hx9VwAVHEyVJY6Nn16u0d/view?usp=sharing

"*I found the activity very challenging. In doing this project, I didn't just learn how to negotiate public databases, but also to analyze and use the data in a very practical and realistic scenario. I also dabbled into how to create educational promotional materials. I think OER can be a teaching learning activity in oral health promotion courses.*" (MLDSS)

B. ANESTISYA PARA KAY LOLO AT LOLA: A Call for Change

The elderly population in the Philippines is increasing in the past decade. Philippine Statistics Authority data showed that 8.65% of the total population are elderly (aged 60 years old and above). This increasing life expectancy may result from a better lifestyle and improving healthcare. The Department of Health (DOH) predicts that by 2050, 16.5% of the population, or 23 million Filipinos, will be elderly. This geriatric patient population will represent a growing challenge for anesthesia providers nationwide. Some 17.91% of all surgeries performed in the 50 training hospitals accredited by the Philippine Board of Anesthesiology (PBA) are on the elderly. The Anesthesia Digital Census (Aendicus) of the PBA is a digital online census that captures the case-mix and numbers in the training of anesthesiology across all institutions. The Aendicus data showed a parallel increase in the number of critical events with the increasing age of the patient. Morbidity in the elderly is 3-6 times higher than that in the younger patients.

The OER appeals to the Philippine Society of Anesthesiologists to create a component society for the anesthetic care of the geriatric population, and also the Philippine Board of Anesthesiology to revisit the prescribed curriculum and expand the module on geriatric anesthesia. In the coming decades, anesthetic care for the elderly will represent a significant challenge to Filipino anesthesiologists. We should start preparing them now.

Link to the OER:
https://drive.google.com/file/d/1oeLdg2YIQo3f7gFoppOk1likTRK7YnR4/view?usp=sharing

"*The activity of creating this OER as a final requirement for HPEd 391 was intimidating at the start. Aside from doing a lot of research on the topic, conceptualization, creativity, and skills in doing the infographics were necessary. However, the OERs are an innovative way of conducting research, consolidating information, and presenting data in a manner by which teaching and learning health education are simplified and made interesting.*" (MEP)

C. BREAST CANCER AWARENESS IN THE TIME OF COVID

The pandemic has taken its toll on patients with malignancies, particularly breast cancer. Many of the patients diagnosed previously with the disease were either unable to get treatment due to the lockdowns, resulting in progression of their cancer to metastasis or inoperable stages. Those who had breast cancer and would have been diagnosed in the stages that were apparently treatable presented in the latter phases of the pandemic in much worse conditions.

This OER on breast cancer is intended for both health professionals and lay people. The objectives of the OER are to raise awareness for breast cancer and provide information on screening strategies.

The preliminary research on the epidemiology of breast cancer led to online depositories of information maintained by the WHO, US cancer registries as well as local data. Incorporating this data highlighted the need to draw attention to the primary cancer which affects women and leads to the death of thousands annually. This is unfortunate since early detection can save a lot of lives. Educating the public on screening strategies allows detection and possible early diagnosis even without a physician during conditions such as the lockdown.

Link to OER:
https://drive.google.com/file/d/1n6--682qMALoLjqH7fTtPTz9AZ-dyZDi/view?usp=sharing

"*Choosing the topic for an OER was easy since the relevance of educating people on the pressing need to battle breast cancer during the pandemic was evident. Accessing information online was likewise easy. But organizing the information and choosing the format for the OER was difficult for me, because my technological capability as an educator was previously limited to creating PowerPoint presentations. This was my first time to create an infographic, and it required presenting information graphically and effectively communicating to the learner via interesting illustrations - which can be as important as the data itself. Not only must it raise awareness and convey the*

information, it must also interest the learners enough for them to share it and exponentially influence others.

I now appreciate the amount of work put into infographics, such as the numerous infographics made available for COVID education, which I previously took for granted. Being currently an HPEd student, I realized that despite engaging in surgical education for many years, I still have a lot of room for personal development as a teacher. In this day and age of ICT and OERs, we educators must adapt to the needs of our learners by being continuous learners ourselves." (ARP)

D. THE GOAL OF SIGHT

Included in the 2030 Agenda for Sustainable Development by the United Nations is to ensure healthy lives and promote well-being for all at all ages. This entitles the people to a healthy and productive life, thus an enormous impact on the quality of life. Vision plays an important part in an individual's physical health, social relationships, and functional activities and pursuits. Visual impairment extensively affects an individual's well-being. Glaucoma, being an irreversible eye condition, leads to loss of visual function and its early diagnosis is vital in preserving vision-related quality of life.

Objectives of the OER:
1. Determine the alignment of programs initiated in the Philippines with the world;
2. identify gaps and limitations in the existing programs for vision on a national level; and
3. Create an awareness campaign regarding glaucoma and its impact on a patient's quality of life.

References used included the World Health Organization's Report in 2017 which directed the 2018 Philippine National Survey of Blindness. It reflected the dire status of visual health. Programs directed at screening and diagnosing these cases to start early treatment is important, so as not to lose sight of the goal.

Link to the OER:
https://drive.google.com/file/d/1uNkSWLubeLOAai74LUe
HrMBcB1xeo5PY/view?usp=sharing

"The use of open education resources as a teaching learning strategy serves as a valuable access to learning. It encourages enhancement of course content through collaboration of ideas and resources. This helps showcase innovation and talent of an adult learner, thus creating an opportunity to integrate and enrich andragogy." (RJQ)

In conclusion, this paper aimed at an exposition of the OER Movement, and to share the class experience with this relatively novel teaching learning strategy. A variety of types and uses of OERs was shown. The collective perspective of the authors were that creating an OER is challenging but effective. Some proposed insights and suggestions for teachers planning to use it. An evaluative research on the use of OERs in achieving course outcomes following Kirkpatrick's Evaluation Model is recommended.

Competing Interests

The authors have no competing interests to declare.

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