

Utilizing OER-OEP to Support a Resilient Sustainable Education

Debolina Halder

Indira Gandhi National Open University, India.

Email: debolina.adhya@gmail.com

ORCID: <https://orcid.org/0000-0001-8402-463X>

Abstract

Covid-19 pandemic has caused unprecedented disruption to education systems worldwide, leading to a paradigm shift to technology enabled learning (TEL) from face-to-face (f2f) interactions. TEL ensured teaching-learning continuity and prevent learning losses without f2f interventions. The pandemic became an opportunity for expansion in creation and use of Open Educational Resources (OER) and marked the beginning of a shift towards Open Educational Practices (OEP). These developments, amidst disruptions created possibilities to harness both OER and OEP to mitigate short term learning loss during Covid-19 and to build education systems that are capable of overcoming adversity and are resilient to future crises and disruptions. This paper explores the theoretical and empirical literature to outline how OER and OEP support open pedagogy as an educational response to Covid-19. It presents a generic OER-OEP framework based on an open pedagogy continuum which includes 'Enhance', 'Extend' and 'Empower'. It identifies the barriers faced in respect of OER adoption and OEP engagement, and the perceived impact of OER on teaching practices. Based on this framework and on identified barriers, a set of guidelines for the effective use of OER and OEP for teaching and learning is presented. The findings figured out the importance of OER adoption, especially in times of crises, and an increased engagement with OEP for sustainable learning opportunities, contributing to open education development post pandemic. The study recommends building more focus on scaffolding for faculty and students in the implementation of open pedagogy, as well as more institutional support for better learning experiences and outcomes.

Keywords: Open Educational Resources, Open Educational Practices, Covid-19 Pandemic, Resilient Sustainable Education

Introduction

The impact of the Covid-19 pandemic on education is both unprecedented and widespread in history, impacting nearly every student in the world (UNICEF 2020). From early childhood education to postgraduate study, the resilience of education systems all over the world is being tested. There was a need for urgent reskilling and upskilling of teachers and learners for an immediate transition to technology enabled learning (TEL) to prevent learning losses (Naidu, 2021). Around the globe, there are concerns about the current disruption, new paradigms that re-conceptualize teaching, learning and assessment, and a sustainable response to shape future pedagogies to support post-pandemic education (Bozkurt & Sharma, 2020; Bonk et al., 2020).

Amidst disruptions, TEL facilitated opening up of education through an open pedagogy based on creativity and innovation in a participatory learning environment, which is resilient and sustainable (Ossiannilsson et al., 2020; Wiley et al., 2017). Open pedagogy is the use of Open Educational Resources (OER) to support learning and open sharing of teaching practices with a goal of improving education. Conceptualizing open pedagogy requires knowledge of the 5 R's of OER: the ability to revise, remix, redistribute, retain, and reuse content (Wiley, 2013). In response to the pandemic, United Nations Educational, Scientific and Cultural Organization (UNESCO) launched a call to support learning and knowledge sharing through OER worldwide. It was aimed to address the challenges to learners of this and future pandemics, as well as to lay the foundation for the systematic integration of best practices to improve knowledge sharing in the future of learning after the Covid-19 pandemic (UNESCO, 2020). The pandemic disrupted traditional face-to-face (f2f) education, undermining teaching and learning across the globe; conversely, it demonstrated how essential open practices (e.g. free sharing of information among and within educational networks, unfettered access to education materials, etc.) are to ensure the continuity of education (Bozkurt et al., 2020; Wetzler, 2020). As teaching and learning practices, open pedagogy use OER within a framework of Open Educational Practices (OEP), including open sharing of ideas and resources, collaborating and connecting with professional communities, creating and co-creating knowledge, and open sharing of teaching practices (Hegarty, 2015).

During the pandemic, while TEL provided a viable replacement for in-person teaching and learning (Adedoyin & Soykan, 2020), OER and OEP have facilitated practical and equitable approaches to learning, teaching, and assessment. They also allowed adaptability which expanded the utility and sustainability of learning strategies and instructional content, making it suitable for multiple audiences and learning modes (f2f, blended, online), purposes, practices, and contexts. The benefits would be further explored and enriched in physical classrooms post pandemic (Doi, Lucky & Rubin, 2022; Huang et al., 2020; Ossiannilsson et al., 2020). Increased awareness of OER and engagement with OEP during Covid-19 would be a key factor in efforts towards a more resilient blended education approach going forward as the pandemic recedes (Ledeman, 2021).

This paper tried to address three aspects: the importance of OER adoption, increase in OEP engagement for sustainable learning opportunities during pandemic, and to draw lessons from the Covid-19 experience that will make education systems more resilient in future.

Conceptualizing Open Pedagogy, OER and OEP

Open pedagogy is a set of teaching and learning practices that is only possible in the context of the free access and 5R permissions characteristic of open educational resources (Wiley, 2013). A review of open pedagogy in the extant literature demonstrates it as an evolving subset of the OEP (Cronin & MacLaren, 2018). The focus of open pedagogy is towards student-centered technological approaches that emphasize collaboration (Hegarty, 2015; Mackintosh, McGreal, & Taylor, 2011). An important aspect of these collaborations is the presence OER. OER is learning, teaching, and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license that permit no-cost access, reuse, repurpose, adaptation, retention and redistribution by others (Stracke et al., 2019; UNESCO, 2019). DeRosa and Robison (2017) defined open pedagogy as the use of OER for remaking courses so that they become not just repositories for content, but platforms for learning, collaboration and engagement with the world outside the classroom. Covid-19 has become a growth opportunity for the creation and use of OER and marks a shift towards OEP. Wiley and Hilton (2018) considered OEP as an OER-enabled pedagogy and defined it as a set of teaching and learning practices that are only possible or practical in the context of the 5R permissions that are characteristic of OER. OEP refers to collaborative practices that include the creation, use, and reuse of OER, as well as pedagogical practices employing participatory technologies and social networks for interaction, peer-learning, knowledge creation, and empowerment of learners (Cronin, 2017). These developments open a way for an examination of existing policies and how they can be developed further to harness both OEP and OER to mitigate short- and long-term learning loss during and beyond the Covid-19 pandemic (Isaacs, 2020). A model outlining how OER and OEP support open pedagogy, with various dynamic attributes (see Fig.1) as a resilient educational response to Covid-19 is proposed. OER is essential for these attributes to be enacted as an integral component of an open pedagogy, contributing holistically to OEP (Hegarty, 2015). Focusing on *practice*, instead on resources, helps ensure that a holistic approach is taken; including the stakeholders involved (i.e. the learners and the teachers) and most importantly the context within which the OER is created or used (Ehlers & Conole, 2010).

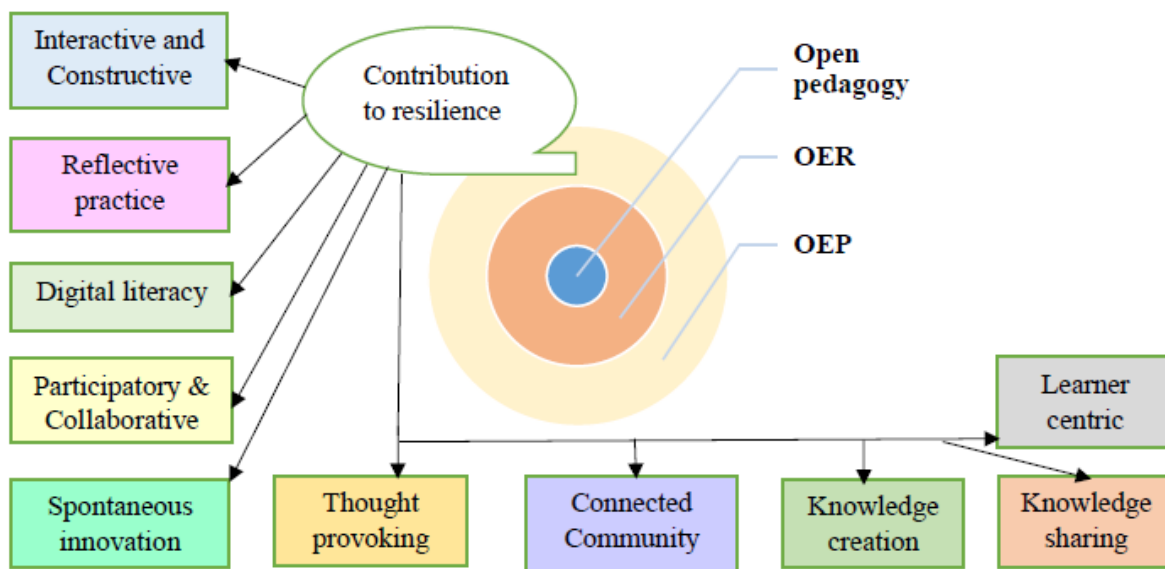


Fig. 1: OER Enabled Pedagogy

Educational response to Covid-19: Role of OER and OEP

Resilience in Education

To reduce the negative impact of pandemic, it is essential to build resilience in teaching and learning. When institutions had to shift within a matter of days to TEL, most had no time/limited time to prepare online learning content. Preparing for resilience means investing in quality learning materials, either developed in-house or chosen from among the variety of OER available from many sources (e.g. OpenStax, COL's Open Access Repository, OER Commons etc.). OER can save time in preparing learning materials. Teachers can draw on the abundance of high-quality learning material available as freely usable OER. Having such materials ready, whether as part of normal campus teaching, blended learning or for emergency off-campus moves, has two significant advantages. First, learners and teachers do not have to communicate simultaneously. Asynchronous working gives teachers' flexibility in preparing learning materials and enables learners to find content to solve problems, write reports, or do research. Teachers do not need to deliver material at a fixed time: it can be posted online for on-demand access and students can engage with it using wikis, blogs and e-mail. Teachers can check on students' participation periodically and make online appointments to solve students' queries. Second, investment in materials for asynchronous use has its own advantages, because they can be revised, remixed and used many times (Kanwar & Daniel, 2020).

During Covid-19 outbreak, examination systems did not prove to be very resilient. End-of-year examinations were cancelled or suspended by many examining bodies. Before the outbreak of the pandemic many teachers and institutions were starting to conceive assessment as a continuous rather than an occasional process, a collaborative activity focusing on verifying knowledge, competence and capabilities rather than on judging their status within a group of learners. The role of assessment is experiencing a resurrection as educators explored ways in which authentic assessment and feedback can be used to enable learning. COVID-19 gave further impetus to thinking about new methods of assessment (Kanwar & Daniel, 2020). The assessment methods used most often during the pandemic included presentations, projects, assignments, peer and collaborative evaluation, open badges and e-portfolios. The most frequently reported assessment activities were performance assessments, followed by modified performance assessments, which included discussions, research projects, reading tasks, research methods, and reflective essays (Montenegro-Rueda, 2021). Teachers allowed learners to evaluate one another (peer assessment - feedback, reports, and dashboards), emphasizing reflective practices, enhancing the OER and improving learning outcomes. Engaging students as contributors and creators of OER as part of assessment could lead to benefits for the student in terms of

promoting their own creative work, forging connections, and building their own portfolio. Additionally, teachers can apply the connectivist learning approach (Goldie, 2016) by asking students to write reports as OER on a given topic as well as create new exercises for a specific chapter within the course content. To start the process of course construction by designing the student assessments that will be part of it is a way of clarifying learning objectives and content that can make an education system more resilient. While designing assessment and evaluation activities, faculty may enact OEP by exploring ways in which they can engage students as producers of content, find ways to integrate peer-review and assessment, promote student collaboration, and develop digital literacies (Paskevicius, 2017; Huang et al., 2020). This method encouraged the learners to freely comment on one another's answers, activating self-reflection while encouraging the learners to exchange opinions in order to build an open, learning environment, hence increasing engagement (Zhang et al., 2020).

Sustainable Educational Response

The Covid-19 pandemic has created an opportunity for future education systems to be re-imagined and re-designed to build back more sustainable solutions emerged (Crawford & Cifuentes-Faura, 2022). The implementation of open pedagogy requires an agile and resilient approach as it fosters and empowers sustainable learning in a rapidly changing environment (Ossiannilsson, 2018).

This paper proposed an OER-OEP framework, based on an open pedagogy continuum which includes 'Enhance', 'Extend' and 'Empower to effectively support learning, teaching and assessment across disciplines and levels of study (derived from 3E Framework designed by Smyth et al., 2011). The three broad stages within the continuum (See Fig 2) are further illustrated by OER adoption and OEP engagement courses across the globe amidst Covid-19 disruptions.

Enhance: The use of OER enables greater access to educational resources and the ability to adapt resources for different contexts in multiple instances by improving the quality of instructional content progressively to *enhance* learning outcomes.

Course1: Due to school closures and suspension of f2f mode during pandemic in 2020, a comprehensive open-source English learning website called Cool English provided services to many students and teachers and supported continuity in language teaching and learning in schools in Taiwan. The Cool English project has not only developed innovative resource materials with government support but also adopted very useful OER materials from around the world. This blended approach can help educators and learners to speed up the development of various OER, aiding teaching and learning and providing a more sustainable educational experiences for all learners in the post-COVID-19 period (Chen, 2020).

Extend: The use of OEP helps to *extend* learners activity and agency, that facilitates self-directed learning, constructive engagement in the learning process, promote creativity and collaborative learning and assessment opportunities.

Course2: To provide an engaging learning experience during the COVID-19 outbreak, the Smart Learning Institute of Beijing Normal University, China applied OEP-based course for teaching family education. Based on the outcomes, it was observed that the OEP-based course has affected positively the learners' motivation level, learning engagement, and learners' individual connection. At the same time to ensure open assessment and collaboration, a public learning community was built where students exchanged ideas and discussion together to promote creativity and reflective practices about their proposed learning materials. Such pedagogical approaches make possible the development of the key competencies needed for promoting sustainable development (UNESCO, 2017; Huang et al., 2020).

Empower: The use of both OER and OEP *empower* learners and teachers to develop collaborative practice which support the (re)use, production and sharing of resources by making them openly available; and pedagogical practices are employed which rely on social interaction, knowledge creation, peer-assessment, and shared learning practices.

Course3: The Open University of China (OUC) arranged open trainings utilizing OER for kindergarten teachers (especially in rural areas) to improve their professional skills during the COVID-19 pandemic. A unified learning plan was designed, where the teachers had to go through different learning resources and submit their activities online. This helped them to combine their working practice with their own professional development in the learning process and carried out in-depth learning in a focused and phased manner through the mode of self-study, submission of assignment, online discussion, summary and reflection. Additionally, the trainers used social network applications, such as WeChat, to create open communities where teachers can exchange opinions and feedback and help each other

progress. This culture of sharing and collaborative learning will become the new educational and sustainable learning paradigm (Huang et al., 2020; Ossiannilsson & Creelman, 2011).

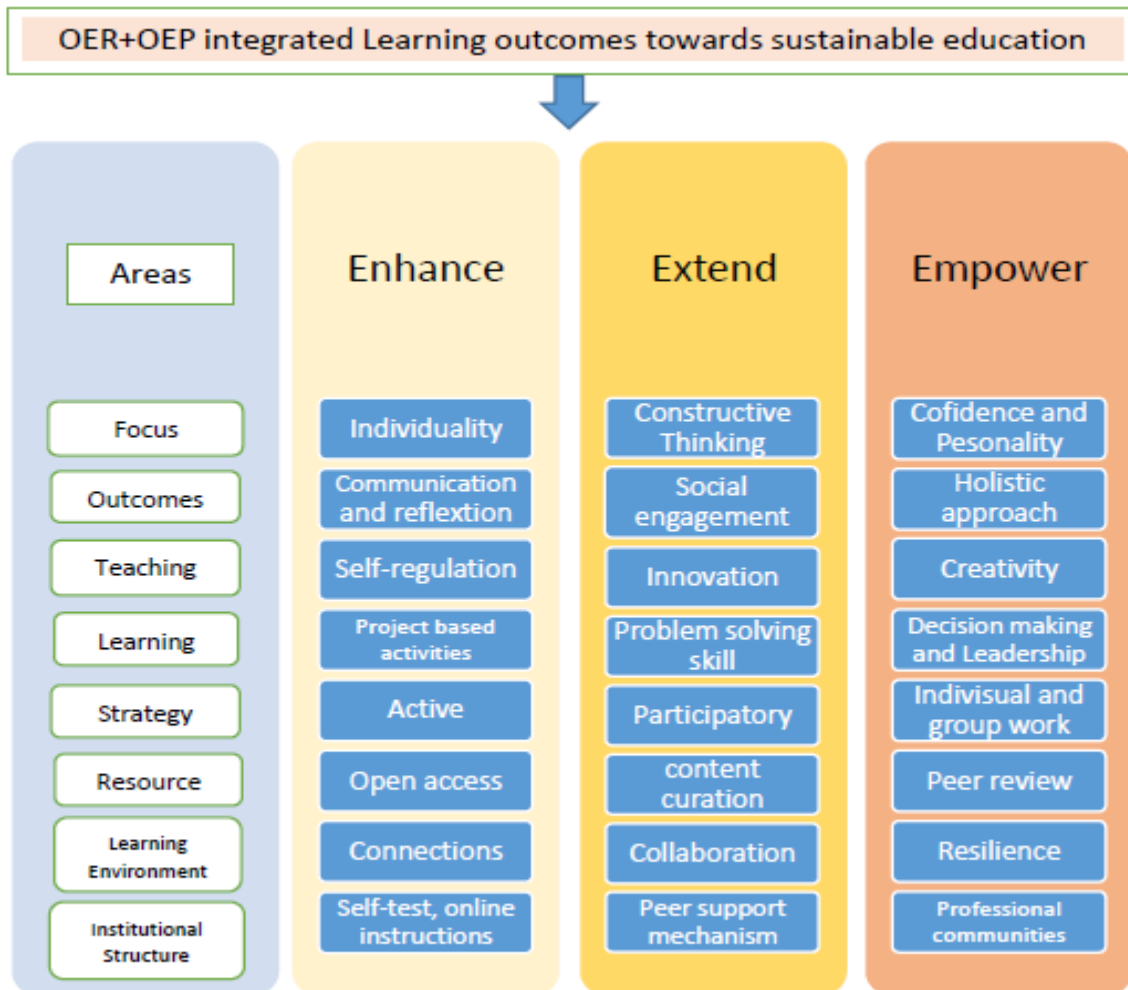


Fig. 2: Enhance-Extend-Empower Framework

OER-OEP enabled teaching learning make learners and teachers producers of information and tools, which they compile into personal knowledge spaces, modify into their own knowledge portfolios, and communicate with other learners using a available resources on the internet or other media through individual or group work and finally validate their learning outcomes. Validation is a peer-review, reflection, and bench-learning process in which learners and facilitators jointly assess the appropriateness and utility of newly learned expertise, skills, and perceptions (Kumar & Prabu, 2021).

Barriers to OER-OEP Implementation

The application of OER and OEP to maintain education during the COVID-19 reported different challenges. From the institutional perspective, schools and universities found it challenging to adapt to OER-OEP supported open pedagogy. Some challenges regarding OER adoption are personal choices of content, internet connection and poorly maintained content (Miller & Homol, 2016). Other barriers include lack of awareness of OER, lack of motivation to use OER and lack of training in the use of OER (Hassall & Lewis, 2017). From the teacher perspective, some teachers fear losing control of the teaching process when inviting learners to be active participants by co-creating and contributing to the course activities. Several teachers experienced difficulties in shifting to TEL as they lack the needed skills to

incorporate OEP in their courses (Spoel et al., 2020). From the student perspective, students are more familiar with traditional learning approaches, hence they found it difficult to be self-regulated and adapt to an OEP-structured course (Zhang et al., 2020; Huang et al., 2020).

Recommendation

Teacher Perspective

To properly create and publish OER, teachers can refer to several national and international authoring tools, such as 101ppt software and ALESCO Hub, Connexions repository authoring tool or Open Author, where the learning resources could be simply created via simple clicks and where no specific technical skills are needed. Teachers should consider the quality of the OER they would use by referring to well-known national and international OER repositories, such as the Massachusetts Institute of Technology (MIT), Commonwealth of Learning – Oasis OER and Open Knowledge Repository. To facilitate the application of OEP, teachers should select friendly learning tools and technologies that learners are already familiar with. To make the teaching process more interactive, teachers can build open learning communities by using the social networks where the students can openly exchange ideas, create discussions, and collaborate on different tasks. Teachers can share questions related to specific course materials, and students can discuss them to determine specific answers. Consequently, students learn by exchanging ideas and opinions. During the learning process that utilises OER and OEP, teachers should act as facilitators of the learning process. For instance, teachers can help their students with their reports by suggesting useful references that they should read (Huang et al., 2020)

Student Perspective

Learners should carefully search for, select, and summarise information while preparing their content (e.g. assignments, presentations, videos, reports) to ensure high-quality OER. They should remember to attribute open licences to their prepared open learning materials so they can be reused by others as OER. To develop their independence and capacity to self-regulate within open learning experiences, learners must develop self-regulation. They should maintain a positive attitude when facing learning challenges and consider these challenges as new learning opportunities. Learners should be collaborative and active in building an open learning community by encouraging their peers and participating in discussions (Huang et al., 2020).

Institutional Perspective

Both learners and teachers lack the required skills to create and publish OER. Therefore, training sessions need to be organized to help them to work with OER. These sessions should be designed as blended learning, where participants would be first introduced to theoretical ideas and concepts, followed by hands-on workshops, where the participants (teachers and learners) can be practically involved in learning these skills (e.g. teachers working on specific software to edit a video). Research shows that institutional policies are one of the key aspects to encourage teachers to create and openly publish their resources as OER (Atenas et al. 2019). This can be achieved by, for instance, providing financial incentives for those who contribute to enriching the OER repository of the university. Also, publishing learning materials as OER can be considered by universities as one of the criteria for academic promotion (Huang et al., 2020).

Conclusion

The experience of previous crises suggests that unless special efforts are made to build resilience for the future, the lessons of Covid-19 will soon be forgotten (Fox, 2004; Johnson, & Ronan, 2014). A resilient blended learning approach, which is ready to adapt to disruptions, such as Covid-19, when teaching and learning must be carried out in new circumstances (Kanwar & Daniel, 2020) needs to be implemented. The massive disruption in educational processes has signified the importance of open education, and it gained increasing attention in 2020 as educators responded to the Covid-19 pandemic. Its potential benefits often emerge in three areas: widening the access to education; improving pedagogy; and promoting equal opportunities. The pandemic has led to a paradigm shift in the ways in which teachers and learners impart knowledge and access learning. OER and OEP have facilitated practical and equitable approaches to learning, teaching, alternative assessment and evaluation methods (Bozkurt, 2021; Huang et al., 2020; Ossiannilsson et al., 2020). In response to the pandemic, UNESCO (2020) launched a call to support learning and knowledge sharing through OER worldwide, aimed to address the challenges to learners of this and future

pandemics, as well as to lay the foundation for the systematic integration of best practices to improve knowledge sharing in the future of learning post Covid-19 pandemic. The use of OER enables greater access to educational resources and the ability to adapt resources for different contexts, and both OER and OEP help learners and teachers to develop vital digital capabilities required to be successful in a TEL environment. The adoption of OER and engagement with OEP is one of the few available ways to open access to information and knowledge to build inclusive, sustainable, and resilient knowledge societies.

Reference

- Adedoyin, O.B. and Soykan, E. (2020). Covid-19 Pandemic and Online Learning: The Challenges and Opportunities. *Interactive Learning Environments*, 1–13. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/10494820.2020.1813180>
- Atenas, J. (2019). Fostering openness in education: Considerations for sustainable policy-making. *Open Praxis*, 11(2), 167–183. Retrieved from <https://openpraxis.org/articles/10.5944/openpraxis.11.2.947/>
- Bonk, R.J. et al., (2020). Pedagogy in the Time of Pandemic: From Localisation to Glocalisation. *Journal of Education, Innovation, and Communication*, 17-64. Retrieved from https://www.researchgate.net/publication/342397338_Pedagogy_in_the_Time_of_PandemicFrom_Localisation_to_Glocalisation
- Bozkurt, A. (2021). *Handbook of Research on Emerging Pedagogies for the Future of Education: Trauma-Informed, Care, and Pandemic Pedagogy*. Hershey, USA: IGI Global: Retrieved from https://www.researchgate.net/publication/350996010_Handbook_of_Research_on_Emerging_Pedagogies_for_the_Future_of_Education_Trauma-Informed_Care_and_Pandemic_Pedagogy
- Bozkurt, A. and Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to Corona Virus pandemic. *Asian Journal of Distance Education*, 15(1). Retrieved from <https://www.asianjde.com/ojs/index.php/AsianJDE/article/download/447/297>
- Bozkurt, A. et. al., (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), 1-126. Retrieved from <https://discovery.ucl.ac.uk/id/eprint/10101679/>
- Chen H. (2020). Developing an OER Website and Analyzing Its Use during the COVID-19 Pandemic. *English Teaching & Learning*, 44(4), 451–461. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7666404/>
- Conole, G.C., Ehlers, U.D. (2010): *Open Educational Practices: Unleashing the power of OER*.
- Crawford, J. and Cifuentes-Faura, J. (2022). Sustainability in Higher Education during the COVID-19 Pandemic: A Systematic Review. *Sustainability*, 14(3). Retrieved from <https://www.mdpi.com/2071-1050/14/3/1879>
- Cronin, C. (2017). Openness and Praxis: Exploring the Use of Open Educational Practices in Higher Education. *The International Review of Research in Open and Distributed Learning*, 18(5). Retrieved from <https://www.irrodl.org/index.php/irrodl/article/view/3096>
- Cronin, C., and MacLaren, I. (2018). Conceptualising OEP: A review of theoretical and empirical literature in open educational practices. *Open Praxis*, 10(2), 127–143. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1177676.pdf>
- DeRosa, R., and Robison, S. (2017). From OER to open pedagogy: Harnessing the power of open. In R. Jhangiani & R. Biswas-Diener (Eds.), *Open: The philosophy and practices that are revolutionizing education and science*, 115–124. Retrieved from <https://www.ubiquitypress.com/site/chapters/10.5334/bbc.i/download/597/>
- Doi, C., Lucky, S. and Rubin, J.E. (2022). Open Educational Resources in the Time of COVID-19: Two Case Studies of Open Video Design in the Remote Learning Environment. *KULA*:
- Fox, R. (2004). SARS epidemic: Teachers' experiences using ICTs. In *Beyond the comfort zone: Proceedings of 21st ASCILITE Conference*. Retrieved from <https://www.ascilite.org/conferences/perth04/procs/pdf/fox.pdf>

- Goldie, J. G. S. (2016). Connectivism: A knowledge learning theory for the digital age? *Medical Teacher*, 38(10), 1064–1069. Retrieved from <https://eprints.gla.ac.uk/118043/9/118043.pdf>
- Hassall, C., and Lewis, D. I. (2017). Institutional and technological barriers to the use of open educational resources (OERs) in physiology and medical education. *Advances in physiology education*, 41(1), 77–81. DOI: <https://doi.org/10.1152/advan.00171.2016>
- Hegarty, B. (2015). Attributes of Open Pedagogy: A Model for Using Open Educational Resources. *Educational Technology*. Retrieved from https://upload.wikimedia.org/wikipedia/commons/c/ca/Ed_Tech_Hegarty_2015_article_attributes_of_open_pedagogy.pdf
- Huang, R. et al., (2020). Disrupted classes, undisrupted learning during COVID-19 outbreak in China: a application of open educational practices and resources. *Smart Learning Environments*, 7(19). Retrieved from <https://slejournal.springeropen.com/articles/10.1186/s40561-020-00125-8>
- Huang, R., et al., (2020). Guidance on Open Educational Practices during School Closures: Utilizing OER under COVID-19 Pandemic in line with UNESCO OER Recommendation. Beijing: Smart Learning Institute of Beijing Normal University. Retrieved from <https://iite.unesco.org/publications/guidance-on-open-educational-practices-during-covid-19-pandemic/>
- Isaacs, S. (2020). COVID-19 Education Responses and OER–OEP Policy in the Commonwealth. In S. Mishra & S. Panda (Eds.), *Technology-Enabled Learning: Policy, Pedagogy and Practice*, 33–45. Retrieved from https://www.researchgate.net/publication/343962515_COVID-19_Education_Responses_and_OER-OEP_Policy_in_the_Commonwealth
- Johnson, V. A., & Ronan, K. R. (2014). Classroom responses of New Zealand school teachers following the 2011 Christchurch earthquake. *Natural Hazards*, 72(2), 1075–1092. Retrieved from https://www.researchgate.net/profile/Kevin_Ronan/publication/262484949_Classroom_responses_of_New_Zealand_school_teachers_following_the_2011_Christchurch_earthquake/links/556a546d08aeced77739ff97.pdf
- Kanwar, A. and Daniel, J. (2020). Report to Commonwealth Education Ministers: From Response to Resilience. Retrieved from http://oasis.col.org/bitstream/handle/11599/3592/2020_Kanwar_Report_to_Commonwealth_Education_Ministers_.pdf?sequence=5&isAllowed=y
- Knowledge Creation, Dissemination, and Preservation Studies*, 6(1). Retrieved from <https://kula.uvic.ca/index.php/kula/article/view/218/401>
- Kumar, K. S. and Prabu, M. (2021). *Perception of OER and OEP*. India: Notion Press Retrieved from https://www.researchgate.net/publication/350850082_PERCEPTION_OF_OER_AND_OEP
- Lederman, D. (2021, March 18). Awareness of Open Educational Resources Grows, but Adoption Doesn't. *Inside Higher Ed*. Retrieved from <https://www.insidehighered.com/digital-learning/article/2021/03/18/pandemic-didnt-speed-adoption-open-educational-resources-outlook>
- Mackintosh, W., McGreal, R., and Taylor, J. (2011). Open education resources (OER) for a assessment and credit for students project: Towards a logic model and plan for action. Retrieved from https://auspace.athabasca.ca/bitstream/handle/2149/3039/Report_OACS-FinalVersion.pdf
- Miller, R. and Homol, L. (2016). Building an Online Curriculum Based on OERs: The Library's Role. *Journal of Library & Information Services in Distance Learning*, 10(3-4), 349-359, DOI: [10.1080/1533290X.2016.1223957](https://doi.org/10.1080/1533290X.2016.1223957)
- Montenegro-Rueda, M., Rosa, A.L., Sarasola, J.L. and Fernández, J. (2021). Assessment in Higher Education during the COVID-19 Pandemic: A Systematic Review. *Sustainability*, 13(19). Retrieved from https://www.researchgate.net/publication/354783726_Assessment_in_Higher_Education_during_the_COVID-19_Pandemic_A_Systematic_Review
- Naidu, S. (2021). Building resilience in education systems post-COVID-19. *Distance Education*, 42(1), 1–4. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/01587919.2021.1885092>

- Ossiannilsson, E. (2018). Ecologies of Openness: Reformations through Open Pedagogy. *Asian Journal of Distance Education*, 13(2), 103-119 Retrieved from <https://eric.ed.gov/?id=EJ1315604>
- Ossiannilsson, E. et al., (2020). From open educational resources to open educational practices: For resilient sustainable education. *DMS-DMK Distance et mediations des saviors – Distance and mediations of knowledge*. Retrieved from https://www.researchgate.net/publication/345019619_From_Open_Educational_Resources_to_Open_Educational_Practices_For_resilient_sustainable_education
- Ossiannilsson, E.S. and Creelman, A. (2011). Quality indicators within the use of open educational resources in higher education. Retrieved from <https://www.semanticscholar.org/paper/Quality-indicators-within-the-use-of-open-resources-Ossiannilsson-Creelman/64649a7838078a951aa889979834add9e71a20b4>
- Paper presented to UNESCO Workshop on OER in Namibia 2010. Windhoek. Retrieved from https://www.oerknowledgecloud.org/sites/oerknowledgecloud.org/files/OEP_Unleashing-the-power-of-OER.pdf
- Paskevicius, M. (2017). Conceptualizing Open Educational Practices through the Lens of Constructive Alignment. *Open Praxis*, 9(2), 125–140. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1150488.pdf>
- Smyth, K., Bruce, S., Fotheringham, J. and Mainka, C. (2011). Benchmark for the use of technology in modules. Retrieved from <https://staff.napier.ac.uk/services/vice-principal-academic/academic/TEL/TechBenchmark/Documents/3E%20Framework.pdf>
- Spoel, I., Noroozi, O., Schuurink, E., and Ginkel, S. (2020) Teachers' online teaching expectations and experiences during the Covid 19-pandemic in the Netherlands. *European Journal of Teacher Education*, 43(4), 623-638. DOI: [10.1080/02619768.2020.1821185](https://doi.org/10.1080/02619768.2020.1821185)
- Stracke, C. et al., (2019). Are MOOCs Open Educational Resources? A literature review on history, definitions and typologies of OER and MOOCs. *Open Praxis*, 11(4), 1–11. Retrieved from <https://www.openpraxis.org/articles/10.5944/openpraxis.11.4.1010/>
- UNESCO. (2017). Education for Sustainable Development Goals: learning objectives. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000247444>
- UNESCO. (2019). Recommendation on Open Educational Resources (OER). Retrieved from <https://www.icde.org/knowledge-hub/2020/7/3/unesco-recommendation-on-open-educational-resources-oer>
- UNESCO. (2020). Education in a post-COVID world: Nine ideas for public action. Retrieved from <https://en.unesco.org/news/education-post-covid-world-nine-ideas-public-action>
- UNESCO. (2020). Supporting Learning and Knowledge Sharing through Open Educational Resources (OER). Retrieved from https://en.unesco.org/sites/default/files/covid19_joint_oer_call_en.pdf
- UNICEF. (2020, August 24). 'What will a return to school during the COVID-19 pandemic look like?'. *UNICEF*. Retrieved from <https://www.unicef.org/coronavirus/what-will-return-school-during-covid-19-pandemic-look>
- United Nations. (2020, August). Policy Brief: Education during COVID-19 and beyond. *United Nations*. Retrieved from https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid-19_and_education_august_2020.pdf
- Wetzler, J. (2020, June 1). Leveraging OER for COVID-19 Response Efforts and International Partnerships. *Creative Commons*. Retrieved from <https://creativecommons.org/2020/06/01/leveraging-oer-for-covid-19-response-efforts-and-long-term-international-partnerships/>
- Wiley, D. (2013, October 21). What is open pedagogy? *Improving Learning*. Retrieved from <https://opencontent.org/blog/archives/2975>.
- Wiley, D. and Hilton J. (2018). Defining OER-enabled pedagogy. *International Review of Research in Open and Distributed Learning*, 19(4), 133-147. Retrieved from <https://eric.ed.gov/?id=EJ1192346>
- Wiley, D., Webb, A., Weston, S., and Tonks, D. (2017). A preliminary exploration of the relationships between student-created OER, sustainability, and students' success. *The International Review of Research in Open and Distributed Learning*, 18(4). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/3022>
- Zhang, X. et al. (2020). Accessibility within open educational resources and practices for disabled learners: a systematic literature review. *Smart Learning Environments*, 7(1). Retrieved from <https://slejournal.springeropen.com/articles/10.1186/s40561-019-0113-2>